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Issued January 9, 1913.

U. S. DEPARTMENT OF AGRICULTURE
BIOLOGICAL SURVEY—BULLETIN No. 43
HENRY W. HENSHAW, *Chief*

INDEX TO PAPERS RELATING TO THE FOOD OF BIRDS

BY MEMBERS OF THE
BIOLOGICAL SURVEY

IN PUBLICATIONS OF THE UNITED STATES
DEPARTMENT OF AGRICULTURE
1885–1911

BY

W. L. McATEE
Assistant, Biological Survey

WASHINGTON
GOVERNMENT PRINTING OFFICE
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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Biological Survey,
Washington, D. C., March 13, 1912.

Sir: I have the honor to transmit herewith, for publication as Bulletin No. 43 of the Biological Survey, an index, by W. L. McAtee, to papers on the food and food habits of birds, published up to December 31, 1911, by the Biological Survey of the Department of Agriculture. Since 1885 no fewer than 131 papers relating wholly or in part to the economic status of birds have appeared in the various publications of the department, including Annual Reports, Bulletins, Faunas, Yearbooks, Farmers' Bulletins, and Circulars. These contain more or less extended accounts of 401 species of native birds and 59 foreign or introduced species. The index serves the two very useful purposes: (1) Of showing just what has and what has not been published by the department on the status of birds in the United States; (2) of greatly facilitating reference to the data contained in the reports.

Respectfully,

Henry W. Henshaw,
Chief, Biological Survey.

Hon. James Wilson,
Secretary of Agriculture.

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INDEX TO PAPERS RELATING TO THE FOOD OF BIRDS BY MEMBERS OF THE BIOLOGICAL SURVEY IN PUBLICATIONS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, 1885–1911.

INTRODUCTION.

The object of this bulletin is to furnish an index to papers by members of the Biological Survey in the various publications of the United States Department of Agriculture up to and including December, 1911, which contain information on the economic status of birds as determined by their food habits. Statements concerning the value of feathers, flesh, eggs, guano, or the use of birds as game are not taken into account, but only notes on bird food or inferences drawn from a consideration of food with definite reference to some species of bird.

The publications indexed are the Bulletins, Circulars, and North American Faunas, published by the Biological Survey, the Annual Reports of its Chief, and the Farmers' Bulletins and Yearbooks, publications of the Department of Agriculture as a whole.

In the 26½ years of its existence, from July 1, 1885, to December 31, 1911, members of the Biological Survey have prepared 131 documents relating wholly or in part to the food of birds. These publications contain notes on the economic status of no fewer than 401 species of native birds and 59 species of foreign or introduced birds. (See table.) In the case of 173 species of native birds and one introduced bird, reports embodying a résumé of printed and communicated testimony concerning the food, together with detailed analyses of stomach contents, have been published. These are the most important statements of the economic value of our birds.

Series of publications.	Number in series.	Number of articles containing economic information.	Number of species of birds receiving economic consideration.			
			Formal reports.		Other notes.	
			Native birds.	Foreign and introduced birds.	Native birds.	Foreign and introduced birds.
Bulletins	40	28	162	1	314	28
Circulars	84	13	.....	.....	157	2
Farmers' bulletins (by members of Biological Survey)	23	8	.....	.....	67	4
Faunas	34	13	.....	.....	118	11
Annual reports	25	37	32	.....	93	15
Yearbooks	17	32	9	.....	221	21
Totals (duplicates deducted)	.....	131	173	1	401	59

ANNOTATED BIBLIOGRAPHY OF PAPERS RELATING TO THE FOOD OF BIRDS.

The first part of this bulletin consists of a bibliography of the publications of the Department of Agriculture that were written by members of the Biological Survey and contain information concerning the food of birds, with brief reviews of the papers. The bibliography is divided into sections, arranged in the following order: Bulletins, Circulars, Farmers' Bulletins, Faunas, Annual Reports, and Yearbooks.

BULLETINS.

BULLETIN 1. The English sparrow (*Passer domesticus*) in North America, especially in its relations to agriculture. By Walter B. Barrows. 405 pp. 1 pl. (frontispiece). 9 figs. 1 colored map [by F. E. L. Beal]. 1889.

This comprehensive publication includes discussion of the introduction of the sparrow, method of diffusion, rate of spread and increase, natural enemies; checks by climate, limits of food supply, and by man; its economic status in Great Britain; injuries to fruits, vegetables, garden seeds, and grain; its relations to other birds and to insects; and an account of miscellaneous injuries. Tables showing the results of analysis of contents of 636 stomachs fill 10 pages. Recommendations for legislation and for private efforts to reduce the numbers of sparrows, a general consideration of bounty laws, and a review of the existing legislation affecting the species are given. The bulletin includes also the following special reports:

Insectivorous habits of the English sparrow, by C. V. Riley, pp. 111–133.
Destruction of the sparrow by poison, by Dr. A. K. Fisher, pp. 174–178.
The trapping of sparrows for sporting purposes, by W. T. Hill, pp. 178–191.
History of the house sparrow (*Passer domesticus*) and the European tree sparrow (*Passer montanus*) at Saint Louis, Mo., by Otto Widmann, pp. 191–194.

Pages 197–357 present in detail the evidence from correspondence and published sources upon which the foregoing parts of the bulletin are largely based. The quotations refer to experience with the English sparrow in Europe, America, Australia, and New Zealand, and include casual references to the economic value of a number of foreign and native birds. A list of all persons whose testimony appears in the bulletin and an unusually complete index are given.

BULLETIN 2. Report on bird migration in the Mississippi Valley in the years 1884 and 1885. By W. W. Cooke. Edited and revised by Dr. C. Hart Merriam. 313 pp. 1 colored map. 1888.

Includes casual references to the character of the food of 11 species, mostly birds of prey.

BULLETIN 3. The hawks and owls of the United States in their relation to agriculture. By A. K. Fisher, M. D. 210 pp. 26 colored pls. 1893.

The introduction (pp. 9–18) to this bulletin summarizes the food habits of the various species and groups them according to their economic value. Then

follows the detailed consideration of the food habits of the species, giving information gleaned from correspondence, published sources, and stomach examination. The results of examinations of 37 species are tabulated. The name "short-winged hawk," given on page 11, is a slip of the pen and should be omitted. The same error occurs in Circular 61, p. 3, 1907; Yearbook 1894, p. 217; 1895, p. 590; 1896, p. 628.

BULLETIN 4. The prairie ground squirrels or spermophiles of the Mississippi Valley. By Vernon Bailey. 69 pp. 3 colored pls. 4 colored maps. 1893.

The natural enemies of spermophiles, including nine hawks and six owls, are discussed in pages 15–18.

BULLETIN 5. The pocket gophers of the United States. By Vernon Bailey. 47 pp. 6 figs. 1 colored map. 1895.

In the treatment of natural enemies, pp. 20–22, two species of hawks and three of owls are mentioned.

BULLETIN 6. The common crow of the United States. 98 pp. 1 pl. 2 figs. 1895.

General habits of the crow. Animal food of the crow. Insect food of the crow. By W. B. Barrows [pp. 9–57 and 68–71, figs. 1–2]. Report on the insect food of the crow. By E. A. Schwarz [pp. 57–67]. Vegetable food of the crow. Protection of crops. By W. B. Barrows [pp. 72–94].

Bulletin 6 treats first of the general habits of the crow, including its migrations and the formation of roosts. Next the animal food is discussed, the principal topics being the relations of the crow to rabbits, mice, ground squirrels, gophers, bats, moles, shrews, sheep, swine, eggs and young of poultry and wild birds, and to tortoises, snakes, lizards, frogs, toads, salamanders, fish, crustacea, and mollusks. The insect food is dealt with in a separate chapter, of which the report by E. A. Schwarz occupies 11 pages. In the chapter on vegetable food this omnivorous bird's corn-pulling habits receive full consideration, as do also its relations to other grains and cultivated fruits. The natural foods most fully treated are mast, weed seeds, wild rice, and wild fruits, particularly sumacs. The bulletin contains casual references to the food of a few other species of birds, and closes with a statement of methods for protecting crops from crows and a discussion of bounty laws and their effects.

BULLETIN 7. [The food and tongues of woodpeckers.] 44 pp. 5 pls. 1895. Preliminary report on the food of woodpeckers. By F. E. L. Beal [pp. 7–33, 1 pl. (frontispiece), figs. 1–4]. The tongues of woodpeckers. Relation of the form of the tongue to the character of the food. By Frederic A. Lucas [pp. 35–44, pls. 1–3].

Formal reports on the food habits of 7 species of woodpeckers and brief notes upon 3 others are given by Professor Beal. The introduction is devoted to a general statement of the food and comparison of the various species. Following this are tables showing the percentage of various elements of the food and the relative proportions of adult and larval Coleoptera found in the stom-

achs of 7 species of woodpeckers. Next the species are taken up separately and the animal and vegetable food and the damage attributed to the birds are fully discussed.

The report on tongues by Doctor Lucas notes the peculiarities of this organ in the different genera, discusses the value of these characteristics in classification, and draws conclusions concerning the relation of the form of the tongue to the character of the food. Plates I–III thoroughly illustrate this interesting anatomical essay.

BULLETIN 8. The jack rabbits of the United States. By T. S. Palmer, M. D. 84 pp. 7 pls. 2 figs. 1896.

2nd ed. with numerous alterations and additions, including appendix of 5 pages. 88 pp. 7 pls. 3 figs. 1897.

The information relating to birds is the same in both editions and occurs on the same page, 44. Eight birds of prey are listed among the natural enemies of jack rabbits.

BULLETIN 9. Cuckoos and shrikes in their relation to agriculture. 26 pp. 1 pl. 1 fig. 1898.

The food of cuckoos. By F. E. L. Beal, B. S. [pp. 7–14, fig. 1]. The food of shrikes. By Sylvester D. Judd, Ph. D. [pp. 15–26, 1 pl. (frontispiece)].

After noting briefly the general habits of the yellow-billed and black-billed cuckoos this bulletin treats their food habits collectively. The almost exclusively insect diet is discussed in detail, and a list is given of the species of insects identified in the stomachs. The food habits of the two species of shrikes are treated separately, and lists of the species identified among the prey are given. The report ends with a tabulation of the percentages of principal food elements by seasons.

BULLETIN 12. Legislation for the protection of birds other than game birds. By T. S. Palmer. 94 pp. 2 pls. (maps). 8 figs. (1 map). 1900.

Revised edition. 143 pp. 4 pls. (maps). 7 figs. (1 map). 1902.

The remarks on bird food in this bulletin relate principally to species which, while often used as game, are outside of the ordinary classes of game birds. It is shown that several of these have very beneficial food habits, and their protection is urged. Brief statements of the character of the food of many other species are given in connection with synopses of legislation occasioned by their beneficial or injurious habits. Lists of the species protected and of those specifically exempted from protection in each State and in the Canadian provinces are presented, also the full text of Federal, State, and Canadian laws for the protection of birds.

BULLETIN 13. Food of the bobolink, blackbirds, and grackles. By F. E. L. Beal, B. S. 77 pp. 1 pl. (map). 6 figs. 1900.

This bulletin contains formal reports on the food habits of the bobolink, the cowbird, and 7 species of blackbirds. The introduction notes the salient features of the food of the various species and compares them one with another. The individual treatment of the species comprises discussion of their relations to crops, particularly grain (rice in the case of the bobolink), and a complete

synopsis of the remaining vegetable food and of the insect and other animal food. Tabulations of the principal food items, by months, follow the general account of each species, and diagrams graphically conveying the same information are given for the bobolink, cowbird, and red-winged blackbird.

BULLETIN 15. The relation of sparrows to agriculture. By Sylvester D. Judd, Ph. D. 98 pp. 4 pls. 19 figs. 1901.

The introductory matter in Bulletin 15 comprises a statement of the importance of sparrows, a general account of the principal constituents of their food, and a description of the methods of ascertaining the economic value of birds, including observations in the field and examination of stomachs in the laboratory. Under the food of sparrows as a group are discussed mineral substances found in sparrows' stomachs, food neutral in effect on agriculture, food injurious in effect, and food beneficial in effect. The behavior of sparrows and their habits of feeding in the natural state are described at length, and results of experiments with captive birds are compared with those of the investigation of stomach contents. The caged sparrows were also used to test the efficacy of the various so-called "protective" adaptations of insects, and the resistance of certain hard-coated seeds to the digestive action of the birds. The remainder of the bulletin is devoted to a discussion of the food of sparrows by species. Details of the animal and vegetable food of 26 species are given. Plate IV shows the percentages of the principal food items of 6 species by the graphic method of proportionate sectors of circles. The bulletin contains casual references to the food of numerous species of birds not formally treated.

BULLETIN 17. Birds of a Maryland farm. A local study of economic ornithology. By Sylvester D. Judd, Ph. D. 116 pp. 17 pls. (1 map). 41 figs. 1902.

"Birds of a Maryland Farm" is an account of the relations of all the birds occurring on a 230-acre farm near Marshall Hall to all of the animals and plants used by them for food. Several pages are devoted to a discussion of the local distribution of birds as influenced by topography, nesting facilities, and food supply. In Chapter II is described the behavior of birds during periods of unusual abundance of certain insects, as well as their relations to useful insects and to the standing pests of the various cultivated crops, trees, shrubs, and herbage. The food of the nestlings of several species is described in detail. Chapter III deals with the birds that prey upon poultry, wild birds, fish, carrion, mice, and rabbits, and Chapter IV with those that eat wild and cultivated fruit; this chapter contains also notes on the distribution of seeds by birds. The principal grain eaters are treated in Chapter V and the consumers of weed seed in Chapter VI. The remainder of the bulletin is devoted to a discussion of the food by species or by larger groups. Bulletin 17 represents the results of the most complete study of local economic ornithology that has been made. It gives notes on the food of no fewer than 133 species of birds.

BULLETIN 21. The bobwhite and other quails of the United States in their economic relations. By Sylvester D. Judd. 66 pp. 2 pls. (1 colored). 10 figs. 1905.

Two-thirds of this publication is devoted to a single species, the bobwhite. The discussion of the general habits of the bird, its value as food, as an object of sport, and as an asset on the farm, is very full. The decrease in numbers of the bird, legislation in its behalf, and measures for preservation and propa-

gation, are considered at length. The food is dealt with under the following topics: Grain, weed seeds, mast and pine seeds, fruits, leaves and buds, beetles, bugs, grasshoppers and allied insects, caterpillars, miscellaneous animal food, and food of the young. One hundred and twenty-four different insects and other animals were identified in the stomachs and 138 seeds and fruits. Information of the same character, briefer in all cases, the volume depending on the number of stomachs available for examination, is given for six other species of quails.

BULLETIN 22. Birds known to eat the boll weevil. By Vernon Bailey. 16 pp. 1905.

This bulletin is a preliminary report on the investigations of boll-weevil-eating birds. Notes are given on 11 species of birds in whose stomachs E. A. Schwarz of the Bureau of Entomology found boll weevils and on 9 species added to this list by investigations by the Biological Survey. The field work was done by James G. Gaut and Vernon Bailey; the stomachs were examined by F. E. L. Beal.

BULLETIN 23. The horned larks and their relation to agriculture. By W. L. McAtee. 37 pp. 2 pls. 13 figs. 1905.

The horned larks of the United States belong to a single species composed of 21 subspecies. Their food habits are treated collectively in this bulletin, except for a Californian subspecies (*Otocoris alpestris actia*), which owing to environment is considerably more vegetarian than the other members of the group. The general habits and economic relations are first discussed, then the vegetable food is considered under the following heads: Wheat, corn, oats, other grains and forage plants, weeds, fruit, and miscellaneous vegetable food. The animal food, mineral matter, and food of the nestlings and other young horned larks precede the account of the California subspecies. This is followed by the summary and a list of seeds, fruits, and invertebrates eaten by the horned larks, which includes 77 items of animal food and 104 of vegetable.

BULLETIN 24. The grouse and wild turkeys of the United States and their economic value. By Sylvester D. Judd. 55 pp. 2 pls. (1 colored). 1905.

The food habits of 12 species of grouse and the wild turkey are described in this bulletin, the fullest accounts dealing with the prairie hen and the ruffed grouse. The insect food, which generally includes a goodly proportion of grasshoppers, and the vegetable food, characterized by the preponderance of berries, buds, and leaves, or browse, are discussed in detail. In the case of the ruffed grouse no fewer than 45 items of animal food and 120 of vegetable are listed.

BULLETIN 25. Birds that eat the cotton-boll weevil. A report of progress. By Arthur H. Howell. 22 pp. 1906.

This "report of progress" on the boll-weevil investigation adds 8 species to the list in Bulletin 22, making 28 in all known to feed on the weevil. The most important notes are those on the orioles, nighthawk, and flycatchers. On pages 19–20 is a brief discussion of the relations of birds to cotton worms. Tables giving the records of birds examined which had and which had not eaten boll weevils conclude the paper. The field work done since the publication of the first report (Bulletin 22) was by A. H. Howell; the stomachs were examined by F. E. L. Beal and W. L. McAtee.

BULLETIN 27. The North American eagles and their economic relations. By Harry C. Oberholser. 31 pp. 2 pls. 2 figs. (maps). 1906.

This report is a compilation of information on the habits and distribution of 3 species of eagles—the bald, the golden, and the gray sea eagles. Their relations to fish, wild birds, poultry, and wild and domestic mammals are discussed and opinions given as to their economic status. Maps showing the breeding ranges of the bald eagle and the golden eagle are included in the bulletin.

BULLETIN 29. The relation of birds to the cotton-boll weevil. By Arthur H. Howell. 31 pp. 1 colored pl. 6 figs. Oct. 10, 1907.

Bulletin 29 is a résumé of the study of birds in relation to the boll weevil. Forty-three species are listed (on page 6) as enemies of the insect, adding 15 to the list in Bulletin 25. Recommendations of measures designed to increase the efficiency of bird enemies of the pest include proposals for legislation in favor of the upland and killdeer plovers and the blackbirds, and suggestions for the special protection of swallows, meadow larks, and painted buntings. Nesting boxes for purple martins are described and illustrated. The relations of the various groups of birds to the boll weevil are described separately, the results of the field work of 1906 and 1907 are given, and the paper ends with tabulated records of birds examined which had and which had not eaten boll weevils. The field work was carried on by the author and the stomachs were examined by W. L. McAtee.

BULLETIN 30. Birds of California in relation to the fruit industry. Part I. By F. E. L. Beal. 100 pp. 5 pls. (1 colored). Nov. 11, 1907.

The introductory paragraphs in this bulletin state the general problem of the relations of birds to cultivated fruit in California. They serve as an introduction to both Part I, the present bulletin, and Part II, issued as Bulletin 34. The status of birds in newly settled regions, the effect of migration on the economic relations, the causes of depredations, conditions in California compared with those in the Eastern States, and protective measures, such as the planting of decoy plants and provision of water supplies, are some of the subjects discussed in the introduction. It is shown that, while birds are usually destructive to crops in newly planted regions, "experience everywhere shows that after a time there is a partial readjustment of conditions, so that inroads by birds become much less common or wholly cease." The usual causes of damage by birds wherever or whenever occurring are defined; the principal bird enemies of fruit in California are named in order of importance, following which are the separate accounts of the species. The food habits of 35 species are fully discussed, including the most important species from the tanagers to the thrushes, in systematic order, together with the linnet, or house finch, the worst fruit pest among the birds in the State. The account of this species is based upon the examination of 1,206 stomachs. The food of the nestlings or young of several species is described, the most extended account dealing with those of the russet-backed thrush.

BULLETIN 31. An economic study of field mice (genus Microtus). By David E. Lantz. 64 pp. 8 pls. 3 figs. Oct. 28, 1907.

In treating the natural enemies of field mice the author mentions some 50 species of birds, including shrikes, cuckoos, crows, herons, bitterns, storks,

ibises, gulls, hawks, and owls. In many cases a brief summary of the general food habits of the species is given, and notes on the diet of the same bird in the Old World or of related European species are also presented.

BULLETIN 32. Food habits of the grosbeaks. By W. L. McAtee. 92 pp. 4 pls. (3 colored). 40 figs. Feb. 29, 1908.

The pine and evening grosbeaks receive only passing mention, but the cardinal, gray, rose-breasted, black-headed, and blue grosbeaks are discussed in detail. The account of each species includes a description of the appearance of the bird, its distribution and habits, the details of its vegetable and animal food, mineral matter found in the stomachs, and the food of the nestlings and other young birds. Lists of the seeds, fruits, and invertebrates eaten by each species are given. One chapter discusses the relations of grosbeaks and other birds to parasitic insects. Some mention is made of the food of about 30 species of birds besides grosbeaks, these references occurring mainly in lists of bird enemies of rose chafers and potato beetles and in an account of birds that feed on mulberries.

BULLETIN 33. The brown rat in the United States. By David E. Lantz. 54 pp. 3 pls. 4 figs. May 29, 1909.

Four owls and seven hawks are mentioned among the natural enemies of the brown rat. One of the owls is said to attack also the black rat.

BULLETIN 34. Birds of California in relation to the fruit industry. Part II. By F. E. L. Beal. 96 pp. 6 colored pls. Aug. 8, 1910.

This bulletin continues the account of the food habits of California birds begun in Bulletin 30. It states that only four of the species of birds common in California (the linnet, California jay, Steller jay, and red-breasted sapsucker) can be regarded as of doubtful utility. The animal and vegetable food of 32 species is fully treated, especially in relation to fruit culture. As in Part I the food of the young is a special feature. Nestlings of 9 species were studied and reported upon, the fullest accounts dealing with the California towhee and the black-headed grosbeak. Part I discussed one species of the sparrow family, that worst fruit pest, the linnet, and important species of the families Tanagridæ (tanagers) to Turdidæ (thrushes) in the order of the check-list of North American Birds by the American Ornithologists' Union. Part II deals with the principal species in the families Tetraonidæ (grouse and quails) to Fringillidæ (sparrows, finches, and grosbeaks).

BULLETIN 37. Food of the woodpeckers of the United States. By F. E. L. Beal. 64 pp. 6 pls. (5 colored). 3 figs. May 24, 1911.

The accumulation of woodpecker stomachs in the 16 years since the publication of Bulletin 7 enabled Professor Beal to present in Bulletin 37 formal reports on the food habits of 16 species, 9 more than were treated in the preliminary report. Brief notes upon the food of 6 other species also are included; the food of 11 species of woodpeckers which were not even mentioned in Bulletin 7 is discussed. Tables are given showing the comparative rank of the species as consumers of animal and vegetable food and of ants and beetles.

BULLETIN 38. Birds of Arkansas. By Arthur H. Howell. 100 pp. 7 pls. (1 colored map). 4 figs. (maps). Oct. 12, 1911.

A section of the introduction to this bulletin is devoted to a general statement of the economic value of birds, and brief notes on the food of 126 species are scattered through the text.

BULLETIN 39. Woodpeckers in relation to trees and wood products. By W. L. McAtee. 99 pp. 12 pls. (2 colored). 44 figs. Sept. 26, 1911.

This bulletin deals principally with the relations of three species of woodpeckers—the true sapsuckers—to living trees and the effect of their work upon the value of the articles into which the wood of these trees is manufactured. The sapsuckers are known to attack at least 258 trees, shrubs, and vines, of which 32 are sometimes killed and 63 seriously injured. Defects due to sapsucker work have been found in the wood of 174 species of trees, in 90 of which they are at times so serious as to spoil the appearance or workability of the wood, and in 22 species they sometimes render the wood useless except for coarse construction or for fuel. The damage done to fence posts, telephone poles, and buildings by 10 other species of woodpeckers is also discussed.

CIRCULARS.

The Biological Survey had its origin as a section of Economic Ornithology established under the Division (now Bureau) of Entomology. Four circulars of that division (Nos. 18, 20, 24, and 27) were published in the interest of the new subdivision, and one of them, No. 20, relates to the food habits of birds.

The earliest circulars of the Division of Economic Ornithology and Mammalogy were largely devoted to requests for information and letters of acknowledgment, which are now issued as "forms." Directions for preparing specimens, contained in Nos. 4, 11, and 12, and later Nos. 46 and 49, are still issued as circulars. Aside from these circulars, No. 17, Bird Day in the Schools, is the only one up to No. 27, inclusive, which is intended for the diffusion rather than the acquisition of knowledge.

Most of the circulars issued since No. 28 (1900) are short articles conveying information which it was desirable to give speedy publicity. Six of them are devoted to enonomic ornithology and five others contain brief references to the economic status of certain birds. Two of the latter (Nos. 29 and 38) were issued from the office of the Secretary and hence do not fall into the class of publications here indexed. No. 29, Protection and Importation of Birds under Act of Congress approved May 25, 1900, discusses the Lacey Act and refers (pp. 1, 3, 4, and 5) to prohibition of entry of injurious species, including the starling and English sparrow. No. 38, Interstate Commerce in Birds and Game, lists (p. 2) robins, swallows, cedar birds, meadowlarks, flickers, and nighthawks as insectivorous, and longspurs, snow buntings, and shore larks as useful in destroying weed seeds.

DIVISION OF ENTOMOLOGY.

CIRCULAR 20. [Circular on economic ornithology.] By Dr. C. Hart Merriam. [2 pp. of print and 2 blank for answers to questions, unnumbered.] July 1, 1885.

This circular briefly states the general problem of economic ornithology and the need of information. Questions relating to the food of 9 species of birds denote by implication the economic relations of these birds. The damage done in the South by the bobolink and red-winged blackbird is mentioned.

BIOLOGICAL SURVEY.

CIRCULAR 1. Circular on the food habits of birds. By Dr. C. Hart Merriam. [3 pp., not numbered.] July 20, 1886.

This circular consists largely of questions relating to the food habits of the crow, the crow blackbird, and the bobolink. Few direct statements are made regarding the food, but much is implied.

CIRCULAR 2. Circular on the English sparrow (*Passer domesticus*). By Dr. C. Hart Merriam. [1 p., unnumbered.] July 20, 1886.

Consists entirely of questions concerning the food of the English sparrow and its relations to other birds.

CIRCULAR 5. Circular to rice growers. By Dr. C. Hart Merriam. [1 p., unnumbered, 1886.]

Notes damage done to rice by the bobolink and red-winged blackbird and contains queries designed to bring out the nature and extent of the injury.

CIRCULAR 17. Bird day in the schools. By T. S. Palmer. 4 pp. July 2, 1896.

The history of bird day is given, the manner of its observance, and the objects and value of the day. Notes are given on the economic status of hawks, owls, and the English sparrow, and the bad results from bounty laws aimed against these birds.

CIRCULAR 34. Laws for the protection of birds and game in the District of Columbia. By T. S. Palmer. 8 pp. Oct. 25, 1901.

This circular quotes the Lacey Act, which contains the names of the starling and the English sparrow in the clause prohibiting the importation of injurious species.

CIRCULAR 56. Value of swallows as insect destroyers. By H. W. Henshaw. 4 pp. Apr. 27, 1907.

This circular shows the great value of swallows as insect destroyers and the importance of protecting them wherever found. It emphasizes the peculiar value of these birds in the war against the cotton-boll weevil, and asks the cooperation of citizens of Northern States, where these birds chiefly nest, in an effort to increase their numbers. The enemies of swallows, especially the English sparrow, are noted, and suggestions for preventing their attacks, as well as for attracting the swallows themselves, are given. The circular includes also directions for colonizing martins and for rearing their young.

CIRCULAR 57. Birds useful in the war against the cotton-boll weevil. By H. W. Henshaw. 4 pp. Apr. 27, 1907.

This circular directs attention to the importance of birds as enemies of the boll weevil and to the need of protecting them. Orioles, the nighthawk, and swallows are given special consideration and a few other species known to eat boll weevils are mentioned. Measures for protecting and attracting swallows are given. The suggestions for aiding the purple martin are especially full, including remarks on colonization, food for young, the English sparrow as an enemy, and the provision of martin houses.

CIRCULAR 61. Hawks and owls from the standpoint of the farmer. By A. K. Fisher. 18 pp. 6 figs. July 18, 1907.

This circular condenses the information presented in Bulletin 3 and is a direct revision of the article in the Yearbook for 1894 (pp. 215–232). Brief summaries of the food habits of 33 species of hawks and owls are given, and 14 others are merely mentioned in the list of those classed as chiefly beneficial.

CIRCULAR 64. Destruction of the cotton-boll weevil by birds in winter. By Arthur H. Howell. 5 pp. 1 map. June 19, 1908.

Thirty species of birds were discovered to feed upon the boll weevil in winter. Every death of a weevil at that season "prevents the production of very numerous progeny during the early summer and postpones the date when the increase will become so great as to destroy the cotton squares as fast as they appear." The more important species are the blackbirds, meadow larks, sparrows, titlarks, wrens, and titmice. According to Howell's estimates titlarks alone destroy about 72,000 boll weevils during the winter on each large plantation. The circular ends with a tabulated seasonal record of the birds which had eaten boll weevils. This list of 53 increases by 10 the number of species reported in Bulletin 29.

CIRCULAR 76. The California ground squirrel. By C. Hart Merriam. 15 pp. 4 figs. (1 map). Nov. 25, 1910.

Contains a few references to bird enemies of *Citellus beechyi*, and discusses danger to small birds from poisoned grain laid for the ground squirrels.

CIRCULAR 79. Our vanishing shorebirds. By W. L. McAtee. 9 pp. 3 figs. April 8, 1911.

The value of shorebirds has not been recognized in the past and they have been hunted until only a remnant of their once vast numbers is left. The fact that these birds have a decided economic value is demonstrated in this publication, and their protection is urged. The name ringed plover (*Aegialitis hiaticula*) near the bottom of p. 4 of this circular should be piping plover (*Aegialitis meloda*).

CIRCULAR 80. Progress of game protection in 1910. By T. S. Palmer and Henry Oldys. 36 pp. 1 fig. (map). June 29, 1911.

Classes the starling as injurious.

CIRCULAR 81. Three important wild duck foods. By W. L. McAtee. 19 pp. 19 figs. (3 maps). Sept. 9, 1911.

Written primarily to furnish information on the methods of propagating wild rice, wild celery, and pondweeds, this circular briefly notes the importance of these plants as food for 17 species of wild ducks. A table on the first page shows the percentages of the food of 16 species furnished by these plants.

FARMERS' BULLETINS.

FARMERS' BULLETIN 54. Some common birds in their relation to agriculture. By F. E. L. Beal, B. S. 40 pp. 22 figs. May, 1897.

Revised edition. 48 pp. 22 figs. March, 1904.

The original edition (1897) contains summaries of the food habits of 28 species and brief references to the nature of the food of 8 others. The revised edition (1904) contains 40 specific summaries and notes on 14 species. Farmers' Bulletin 54 is the one article on bird food to have if the complete series of bulletins and other publications of the Biological Survey is inaccessible. Many of the food summaries, though brief, are important, being based on the examination of large numbers of stomachs. Several of them, for instance those on the kingbird, cedar bird, robin, and bluebird, are the most comprehensive statements yet published on the economic relations of these common and important birds.

Farmers' Bulletin 54 has (up to Oct. 15, 1912) been reprinted 39 times, and a total of 595,000 copies has been distributed.

FARMERS' BULLETIN 160. Game laws for 1902. A summary of the provisions relating to seasons, shipment, sale, and licenses. By T. S. Palmer and H. W. Olds. 56 pp. 3 figs. (maps). 1902.

FARMERS' BULLETIN 180. Game laws for 1903. A summary of the provisions relating to seasons, shipment, sale, and licenses. By T. S. Palmer, Henry Oldys, and R. W. Williams, jr. 56 pp. 4 figs. (maps). 1903.

Each of these bulletins quotes the Lacey Act, a clause of which prohibits importation of the English sparrow and starling as injurious birds.

FARMERS' BULLETIN 197. Importation of game birds and eggs for propagation. By T. S. Palmer and Henry Oldys. 27 pp. 1 fig. (map). 1904.

Contains a note on the feeding habits of some capercaillie liberated in Algonquin National Park, Canada.

FARMERS' BULLETIN 335. Harmful and beneficial mammals of the arid interior, with special reference to the Carson and Humboldt Valleys, Nevada. By Vernon Bailey. 31 pp. 9 figs. Oct. 21, 1908.

Among the natural enemies of the Carson meadow mouse (*Microtus montanus*) are listed ravens, magpies, and shrikes. Each of these names can refer to only a single species in the region covered by the bulletin and for this reason is indexed. General references (such as hawks, owls, and birds of prey) are numerous but unfit for indexing.

FARMERS' BULLETIN 352. The Nevada mouse plague of 1907–8. By Stanley E. Piper. 23 pp. 9 figs. Mar. 20, 1909.

This bulletin comments on the destruction of many individuals of 5 species of birds by wheat poisoned with phosphorus, which was put out to kill meadow mice. Several birds are listed among the natural enemies of the mice.

FARMERS' BULLETIN 383. How to destroy English sparrows. By Ned Dearborn. 11 pp. 4 figs. Jan. 20, 1910.

A brief review of the food habits of the English sparrow is given in the introduction.

FARMERS' BULLETIN 390. Pheasant raising in the United States. By Henry Oldys. 40 pp. 17 figs. Apr. 18, 1910.

Crow mentioned among enemies of pheasants.

FARMERS' BULLETIN 456. Our grosbeaks and their value to agriculture. By W. L. McAtee. 14 pp. 3 figs. June 30, 1911.

An abstract of Biological Survey Bulletin 32, containing brief summaries of the food habits of five species of grosbeaks.

FARMERS' BULLETIN 470. Game laws for 1911. A summary of the provisions relating to seasons, shipments, sale, limits, and licenses. By Henry Oldys, C. E. Brewster, and Frank L. Earnshaw. 52 pp. 2 figs. (maps). August 21, 1911.

Starling and English sparrow mentioned as injurious.

NORTH AMERICAN FAUNAS.

This series of publications comprises the more technical papers, such as monographs of certain groups of mammals and descriptions of new species, in addition to accounts of the scientific results of explorations of certain States or other districts. The annotated lists of birds, which are a prominent feature of the latter class of faunas, often contain notes on bird food. These notes are usually definite records of stomach examinations or of observations in the field. They are indexed in detail; hence it is not necessary for users of the index to consult the pages of the faunas themselves, unless they desire to learn the combinations of items in individual stomachs, the quantity of food taken, or details of the feeding habits.

FAUNA 3. Results of a biological survey of the San Francisco Mountain region and desert of the Little Colorado, Arizona. 136 pp. 5 colored maps. 13 pls. 2 figs. Sept. 11, 1890.

Part 4.—Annotated list of birds of the San Francisco Mountain plateau and the desert of the Little Colorado River, Arizona. By Dr. C. Hart Merriam [pp. 1–101, pls. I–XI, colored maps 1–4].

FAUNA 5. Results of a biological reconnoissance of south-central Idaho. 132 pp. 4 pls. (1 colored). 4 figs. July 30, 1891.

Results of a biological reconnoissance of Idaho, south of latitude 45° and east of the thirty-eighth meridian, made during the summer of 1890, with annotated lists of the mammals and birds, and descriptions of new species. By Dr. C. Hart Merriam [pp. 1–108, pls. 1–4, figs. 1–4].

FAUNA 7. The Death Valley expedition. A biological survey of parts of California, Nevada, Arizona, and Utah. 402 pp. 15 pls. 2 figs. 5 colored maps. May 31, 1893.

Report on the ornithology of the Death Valley expedition of 1891, comprising notes on the birds observed in southern California, southern Nevada, and parts of Arizona and Utah. By A. K. Fisher, M. D. [pp. 7–158, colored map 3].

FAUNA 14. Natural history of the Tres Marias Islands, Mexico. 97 pp. 1 pl. [map]. 2 figs. April 29, 1899. Birds of the Tres Marias Islands. By E. W. Nelson [pp. 21–62].

FAUNA 16. Results of a biological survey of Mount Shasta, California, by C. Hart Merriam. 179 pp. 5 pls. 46 figs. October 28, 1899.

FAUNA 19. Results of a biological reconnoissance of the Yukon River region. 100 pp. 7 pls. [1 map]. Oct. 6, 1900. Birds of the Yukon region, with notes on other species. By Louis B. Bishop, M. D. [pp. 47–96].

FAUNA 21. Natural history of the Queen Charlotte Islands, British Columbia. Natural history of the Cook Inlet region, Alaska. By Wilfred H. Osgood. 87 pp. 7 pls. [1 map]. 1 fig. [map]. Sept. 26, 1901.

FAUNA 22. A biological investigation of the Hudson Bay region. By Edward A. Preble. 140 pp. 14 pls. [1 map]. Oct. 31, 1902.

FAUNA 24. A biological reconnoissance of the base of the Alaska Peninsula. By Wilfred H. Osgood. 86 pp. 7 pls. [2 maps]. Nov. 23, 1904.

FAUNA 25. Biological survey of Texas. Life zones, with characteristic species of mammals, birds, reptiles, and plants. Reptiles, with notes on distribution. Mammals, with notes on distribution, habits, and economic importance. By Vernon Bailey. 222 pp. 16 pls. [6 maps]. 24 figs. [16 maps]. Oct. 24, 1905.

FAUNA 27. A biological investigation of the Athabaska-Mackenzie region. By Edward A. Preble. 574 pp. 25 pls. [4 maps]. 16 figs. [4 maps]. October 26, 1908.

FAUNA 30. Biological investigations in Alaska and Yukon Territory. 1. East central Alaska. 2. The Ogilvie Range, Yukon. 3. The Macmillan River, Yukon. By Wilfred H. Osgood. 96 pp. 5 pls. [1 map]. 2 figs. [maps]. October 7, 1909.

FAUNA 33. A biological survey of Colorado. By Merritt Cary. 256 pp. 12 pls. [1 map]. 39 figs. [29 maps.] Aug. 17, 1911.

ANNUAL REPORTS.

Each of the Annual Reports of the Department of Agriculture consists of the report of the Secretary of Agriculture together with those of the chiefs of the various bureaus and divisions. Only the reports of the Chief of the Bureau of Biological Survey and of its predecessor, the Division of Ornithology and Mammalogy, are of interest in the present connection. The first report deals with economic investigations carried on from July 1, 1885, to February 20, 1887, a period of more than one and a half years. All subsequent reports cover approximately a period of one year.

Up to and including the Report for 1893, original articles corresponding to those now published in the Yearbook, and written by various members of the division, accompanied the reports of the chief. Seventeen of them appeared in the eight reports specified. Beginning with that for 1894 the reports of the chief are of a more routine character, containing the customary review of the year's work, plans for the succeeding year, and recommendations. Frequently, however, specific references to bird food are made and all of these are indexed. The comment on each report in the following bibliography gives an idea of the subjects more generally treated.

1886

Report of ornithologist and mammalogist. By C. Hart Merriam. pp. 227–258. 2 figs. 1 colored map.

This first report includes a preliminary discussion of the economic relations of the English sparrow, describes the depredations on rice of bobolinks and red-winged and boat-tailed blackbirds, and refers casually to the food of several other birds.

1887.

Report of the ornithologist and mammalogist. [By C. Hart Merriam.] pp. 399–401.

Notes progress of the investigation of the English sparrow and considers the feasibility of the use of trained hawks in keeping bobolinks out of rice fields.

Food of hawks and owls. By Dr. A. K. Fisher. pp. 402–422.

Consists mainly of a tabulation of contents of 1,072 stomachs, representing 28 species of hawks and owls.

Experiments in poisoning. By Dr. A. K. Fisher. pp. 423–426.

States efficiency in poisoning English sparrows of various preparations of strychnine, arsenic, and corrosive sublimate, in combination with wheat, meal, and hempseed.

Report on some of the results of a trip through parts of Minnesota and Dakota. By Vernon Bailey [birds, pp. 428–431].

Discusses the relations of blackbirds, cowbirds, and bobolinks to the grain crops in this region. Notes on some other articles of diet are given for these birds as well as for a few other species.

Notes on the depredations of blackbirds and gophers in northern Iowa and southern Minnesota in the fall of 1887. By Dr. A. K. Fisher [birds, pp. 454–455].

This report is supplementary to the last, dealing with the habits of the birds in fall and estimating the percentage of destruction, while Mr. Bailey described the depredations that occurred in spring.

1888.

Report of the ornithologist and mammalogist. By C. Hart Merriam. pp. 477–484.

Describes the progress of work on various economic projects and gives an example of one of the labels used on a collection exhibited at the Centennial Exposition of the Ohio Valley and Central States, Cincinnati, July–November, 1888, which contains a brief statement of the food of the red-tailed hawk.

Introduced pheasants. By Dr. C. Hart Merriam. pp. 484–488.

This paper gives an account of the introduction of pheasants and sand grouse into Oregon and Washington. Notes on damage to field and garden crops apparently pertain solely to the ring pheasant (*Phasianus torquatus*).

The sparrow hawk (*Falco sparverius*). By Dr. A. K. Fisher. pp. 491–496. 1 fig.

A review of the testimony of observers as to the economic value of the sparrow hawk, together with a report upon the examination of 163 stomachs.

The short-eared owl (*Asio accipitrinus*). By Dr. A. K. Fisher. pp. 496–498. 1 fig.

Summarizes the recorded observations upon this bird's food and states briefly the results of 50 stomach examinations.

The food of crows. By Walter B. Barrows, S. B. pp. 498–535.

This is a preliminary presentation of the material elaborated later in Bulletin 6 of the Biological Survey. Both the common crow (*Corvus brachyrhynchos*) and the fish crow (*Corvus ossifragus*) are treated, and the results of examination of 86 stomachs of the former and 12 of the latter are given. The economic relations of crows are discussed under the following headings: Injury to corn, wheat, and other cereals; damage to other crops; other vegetable food; the distribution of noxious seeds; the destruction of the eggs and young of poultry and wild birds; insect food; the crow as an enemy of field mice and other small quadrupeds; miscellaneous animal food; and the crow as a scavenger.

The rose-breasted grosbeak (*Habia ludovicana*). An enemy to the Colorado beetle or potato bug. [By W. B. Barrows.] pp. 535–536.

Compiles field observations on this point and emphasizes value of the bird.

1889.

Report of ornithologist and mammalogist. By C. Hart Merriam. pp. 363–370.

Contains references to the food of several species of birds then being investigated by the division.

Marsh hawk. *Circus hudsonius.* By Dr. A. K. Fisher. pp. 370–372. Plate I (colored).

Common screech owl. *Megascops asio.* By Dr. A. K. Fisher. pp. 372–376. Plate II (colored).

Flammulated screech owl. *Megascops flammeolus.* [By Dr. A. K. Fisher.] p. 376.

These three articles are arranged on the same plan, each stating the range of the species treated and its general habits, following this with a compilation of what has been observed regarding its food habits.

1890.

Report of the ornithologist and mammalogist. By C. Hart Merriam. pp. 277–280.

The general nature of the food of crows and the relation of meadowlarks to clover seed are briefly discussed and the economic value of a few other species is mentioned.

Seed planting by birds. By Walter B. Barrows. pp. 280–285.

The agency of birds in distributing the seeds of certain fleshy fruits is the principal topic of this article, but references to other features of bird food habits are included.

Birds which feed on mulberries. By Dr. C. Hart Merriam. p. 285.

The fact is noted that when mulberries are ripe many insectivorus birds forsake their chief diet for the time to feed upon this luscious fruit. A list of 26 species of birds observed to eat mulberries is given.

1891.

Report of the ornithologist and mammalogist. By C. Hart Merriam. pp. 267–271.

Contains a brief review of the economic investigations of the year, putting especial emphasis upon the importance of the English sparrow problem.

1892.

Economic ornithology. By W. B. Barrows. pp. 193–197.

This takes the place of that section of the report of the chief customarily devoted to a review of the economic work of the year. It contains also, however, a preliminary report on the food of horned larks, based upon the examination of 59 stomachs.

Food habits of the cedar bird (*Ampelis cedrorum*). By F. E. L. Beal. pp. 197–200.

The results reached from the examination of 125 stomachs are as follows: (1) That cedar birds eat a certain amount of insect food at all times when it can be obtained, aggregating in the case of the stomachs examined 17 per cent of the food for the whole year; (2) that the greatest amount of insect food is eaten during the months (especially May) when fruit is most abundant; (3) that the young in the nest are fed to a very great extent upon insect food.

1893.

Food habits of the kingbird or bee martin (*Tyrannus tyrannus*). By Walter B. Barrows. pp. 233–234.

This report gives the results of the examination of 171 stomachs, particular attention being paid to the bird's relation to honeybees.

1895.

Report of the chief of the Division of Ornithology and Mammalogy. By C. Hart Merriam. pp. 175–178.

Reference is made to a proposed New York law placing a bounty on English sparrows.

1898.

Report of the acting chief of the Division of Biological Survey. By T. S. Palmer. pp. 37–42.

Contains general reference to the caterpillar-eating habits of cuckoos and the destruction of weed seeds by sparrows.

1899.

Report of the acting chief of the Division of Biological Survey. By T. S. Palmer. pp. 59–70.

This report discusses an effort made to reduce the number of English sparrows in the parks of Boston. The proposed introduction of the great titmouse and blue tit of Europe also receives consideration, and comments are made upon the economic status of these birds. The evil results of the introduction of European sparrows, thrushes, blackbirds, and starlings into Australia and New Zealand are cited as examples of what might result were these birds brought into the United States, Hawaii, or Porto Rico.

1900.

Report of the acting chief of the Division of Biological Survey. By T. S. Palmer. pp. 35–48.

Contains brief references to the nature of the food of a few species, and reviews the Lacey Act, which prohibits the introduction of English sparrow and starling.

1901.

Report of the acting chief of the Division of Biological Survey. By T. S. Palmer. pp. 151–162.

Three species of birds injurious to fruit in California are mentioned.

1902.

Report of the chief of the Division of Biological Survey. By C. Hart Merriam. pp. 209–218.

Three species of introduced birds which have proved injurious in Hawaii are named, and a case is recorded in which the great titmouse was denied admission to the United States.

1904.

Report of the chief of the Division of Biological Survey. By C. Hart Merriam. pp. 291–305.

This report mentions bird enemies of the codling moth in California, discusses the relation of birds to honeybees, and comments on the importation of 3 species of injurious birds.

1905.

Report of the chief of the Division of Biological Survey. By C. Hart Merriam. pp. 303–315.

A brief statement of the economic value of horned larks and grosbeaks is included in this report.

1906.

Report of the acting chief of the Bureau of Biological Survey. By Henry W. Henshaw. pp. 397–418.

Includes brief discussion of the following topics: Ravages of geese in California grainfields, birds in relation to the cotton-boll weevil, economic value of eagles, also of grosbeaks, food of wild ducks, and means of attracting birds.

1907.

Report of the chief of the Bureau of Biological Survey. By C. Hart Merriam. pp. 485–505.

This report discusses scale-eating birds, grosbeaks, the English sparrow, and the relation of birds to the cotton-boll weevil.

1908.

Report of the chief of the Bureau of Biological Survey. By C. Hart Merriam. pp. 571–590.

The economic topics receiving consideration in this report are as follows: Relation of birds to the cotton-boll weevil, California birds in relation to the fruit industry, food of wild ducks, food of woodpeckers, mosquito-eating birds, birds in relation to the codling moth, the spread of the English sparrow in southern California, and means of attracting birds. European skylarks and song thrushes imported for liberation were denied admission, and an investigation of the economic status of the starling is announced.

1909.

Report of the chief of the Bureau of Biological Survey. By C. Hart Merriam. pp. 533–551.

The problem of keeping English sparrows out of southern California receives further attention in this report. Other economic subjects considered are the food of woodpeckers, flycatchers, wild ducks, and shorebirds; birds in relation to wheat aphids, to the boll weevil, and to the fruit industry in California; and the exclusion of injurious species from Hawaii.

1910.

Report of the chief of the Bureau of Biological Survey. By H. W. Henshaw. pp. 549–565.

The economic topics dealt with in this report are as follows: Injury to timber by woodpeckers, food of wild ducks and flycatchers, and birds in relation to the gypsy and brown-tail moths.

SCHEDULES.

The series known as schedules, with one exception, consists of blank forms for the recording of data. No. 4, devoted to questions concerning the economic status of the English sparrow, is indexed.

SCHEDULE 4. Schedule on the English sparrow (*Passer domesticus*). By Dr. C. Hart Merriam [1 p., unnumbered, 1886].

Consists wholly of questions on the presence, abundance, relations to other birds, food, and injurious habits of the English sparrow.

YEARBOOKS.

The Yearbook of the United States Department of Agriculture had its origin in a desire to separate papers of a scientific character, with which the annual reports were becoming burdened, from the administrative reports of the various bureaus and divisions. The first Yearbook, that for 1894, was issued in 1895 and this relation of date of publication to date of volume holds throughout the series. The Yearbook consists principally of special reports and papers which are designed to interest and instruct.

In the 17 volumes thus far issued (including 1910) the Biological Survey has furnished 32 articles dealing to some degree with the food of birds.

1894.

Hawks and owls as related to the farmer. By A. K. Fisher, M. D. pp. 215–232. Pls. I–III. figs. 21–24.

This article is a condensation of Bulletin 3 of the Biological Survey. It contains lists of the wholly beneficial, chiefly beneficial, and harmful hawks and owls, as well as those in which harmful and beneficial qualities about balance. The food habits of 32 species are briefly reviewed.

The crow blackbirds and their food. By F. E. L. Beal. pp. 233–248. fig. 25.

This is the most authoritative account of the food of any species of bird, being based upon the examination of 2,258 stomach contents. The paper takes account also of printed and communicated testimony on the food of the crow blackbird. The grains and fruits eaten, animal food, and food of the young are all carefully considered. Depredations on grain and various other injurious traits are admitted, while on the other hand the birds are stated to do incalculable good by destroying insects.

1895.

Four common birds of the farm and garden. By Sylvester D. Judd. pp. 405–418. figs. 106–109.

The four common birds referred to are the catbird, mockingbird, brown thrasher, and house wren. The range and general habits of each are described; attention is given to any complaints that have been made against the species, and the evidence as to food derived from stomach examination and from experiment are discussed. The verdict is favorable to the brown thrasher and wren, unfavorable to the catbird, and in the case of the mockingbird, from lack of material, judgment is suspended.

The meadow lark and Baltimore oriole. By F. E. L. Beal. pp. 419–430. figs. 110–111.

Although these birds belong to the same family, they have very different habits. The terrestrial meadow lark feeds to a great extent upon grasshoppers, while the most important item of the insect food of the arboreal oriole is caterpillars. The other items of food of both species are fully discussed, and the verdict in each case is in favor of the bird.

Professor Beal points out an error in the calculation on page 422 of the amount saved a township by meadow larks feeding on grasshoppers. The final figure should be about $356, instead of $24. This change was made in the reprints.

Erroneous ideas concerning hawks and owls. [By A. K. Fisher.] p. 590.

Most of this short note is a quotation of the economic classification of the hawks and owls given by Doctor Fisher in the Yearbook for 1894, pp. 217–218.

1896.

Extermination of noxious animals by bounties. By T. S. Palmer. pp. 55–68.

The history of bounty legislation in the United States, expense of the system, objections to it, and the results accomplished are discussed. As bounties have been paid on several kinds of birds, the economic status of the species affected receives passing notice.

The blue jay and its food. By F. E. L. Beal. pp. 197–206. figs. 40–42.

This is a complete discussion of the range, habits, and economic value of the blue jay. Details are given as to the insect and vegetable food. Experiments to determine preferences of a captive jay are described. Except for the nest-robbing proclivities of the jay, upon which final judgment is not passed, the bird is thought to do far more good than harm.

Erroneous ideas concerning hawks and owls. [By A. K. Fisher.] p. 628.

Comment under same title in previous Yearbook applies here.

1897.

Birds that injure grain. By F. E. L. Beal. pp. 345–354.

Professor Beal discusses the cause of the increase in numbers of the principal grain-eating birds, outlines the damage done, and gives somewhat extended accounts of the food habits of 5 species, particularly in relation to grain. Four other species are briefly mentioned.

Useful birds and harmful birds. [By Biological Survey.] p. 670.

This is a tabulation of twenty-five species which are decidedly beneficial to agriculture and should be rigidly protected, and of five species which are injurious and unworthy of protection, with a brief statement of principal foods of each.

1898.

The danger of introducing noxious animals and birds. By T. S. Palmer. pp. 87–110. Pl. VIII. figs. 1–6 (1 map).

This paper reviews the experience of various foreign countries with the introduction of certain mammals and birds, points out the evil results of the importation of the English sparrow into the United States, and calls attention to the danger of similar results arising in other cases if introductions are not controlled. The economic status of 11 species of birds is more or less fully discussed.

Birds as weed destroyers. By Sylvester D. Judd, Ph. D. pp. 221–232. Pl. XV. figs. 59–65.

This is a résumé of the seed-eating habits of all the species known to have any importance as destroyers of weed seeds. Some forty species of birds are mentioned.

The name "clay-colored longspur," bottom of page 226, is unidentifiable.

1899.

A review of economic ornithology in the United States. By T. S. Palmer. pp. 259–292. Pls. VI–VIII (1 map).

This article traces briefly the development of American ornithology in general, but it consists largely of a discussion of the study of birds from the standpoint of dollars and cents. The principal topics relating to bird food are: Investigations as to the value of birds, commencement of investigations along modern lines, a period of notable advance in investigations, and work of the Biological Survey. That section of the paper entitled "Measures for the Destruction, Preservation, and Introduction of Birds" also contains comments on the food habits of several species.

1900.

How birds affect the orchard. By F. E. L. Beal, B. S. pp. 291–304. figs. 34–38.

Birds affect orchards directly by stealing fruit, feeding upon buds, flowers, or the inner bark and sap of the trees, and indirectly by destroying mammals and insects injurious to orchards. This article gives brief accounts of the birds most important in these relations.

The food of nestling birds. By Sylvester D. Judd, Ph. D. pp. 411–436. pls. 49–53. figs. 48–56.

In some cases the food of nestling birds is radically different from that of their parents. When this is the case the difference usually consists in the preponderance of animal food, particularly that of a soft nature, in the diet of the young birds. Dr. Judd describes at varying length the food habits of the nestlings of about 80 species of birds. Incidentally, characteristics of the food of many adults are noted. Dr. Judd introduces in this paper his excel-

lent graphic representation, by means of sectors of a circle, of the proportions of various items in the food of birds. Part of these diagrams are made much more effective by the addition of small figures illustrating a typical member of a group within its particular sector. The article includes an estimate of the value of the crops saved daily by the destruction of locusts by nestling birds in eastern Nebraska during the invasions of Rocky Mountain locusts.

1901.

Two vanishing game birds—the woodcock and the wood duck. By A. K. Fisher. pp. 447–458. pls. 63–64. figs. 37–39 (1 map).

Brief notes on the food of each of these species are given.

1902.

Audubon societies in relation to the farmer. By Henry Oldys. pp. 205–218. pls. 21–22. figs. 11–12 (maps).

This article includes a general statement of the economic value of birds, together with a few specific notes on bird food.

1903.

The economic value of the bobwhite. By Sylvester D. Judd, Ph. D. pp. 193–204. pl. 16 (colored).

This very comprehensive account of the bobwhite includes a statement of its range and general habits; treats the bobwhite as a weed and insect destroyer, as an article of food, and as an object of sport; and discusses measures for the preservation of the species. A very full list of the seeds, fruits, insects, and other invertebrates eaten by the bird concludes the article.

It is now stated upon reliable authority that the record quoted on p. 196 to the effect that 47 cotton-boll weevils were eaten by a bobwhite in one morning is based on observations upon a captive bird. The statement has no value, therefore, as an indication of the relation of bobwhite to the boll weevil under normal conditions.

1904.

The relation of birds to fruit growing in California. By F. E. L. Beal. pp. 241–254.

Most of this article is devoted to the discussion of the species injurious to fruit, but some of the chief enemies of fruit pests are briefly mentioned.

Some benefits the farmer may derive from game protection. By T. S. Palmer. pp. 509–520.

Contains a few notes on the protection of useful birds and prevention of the introduction of injurious species.

1905.

Meadow mice in relation to agriculture and horticulture. By D. E. Lantz. pp. 363–376. pls. 38–41. fig. 89.

A full account of the natural enemies is given, which includes notes on many species of birds.

Federal game protection—a five years' retrospect. By T. S. Palmer. pp. 541–562. pl. 70. figs. 113–125 (maps).

This article names three species of birds denied admission to the United States under authority of the Lacey Act.

1906.

Cage-bird traffic of the United States. By Henry Oldys. pp. 165–180. pls. 8–9.

Refers to damage in rice fields by Java sparrows.

Birds that eat scale insects. By W. L. McAtee. pp. 189–198. figs. 1–3.

Previous to the publication of this paper little had been made public concerning the destruction of scale insects by birds. Indeed, currency had been given to a statement that birds never feed upon scales. However, 57 species are recorded as enemies of various scale insects, 29 of them being known to feed upon the black olive scale, one of the most injurious species in the United States.

1907.

Does it pay the farmer to protect birds? By H. W. Henshaw. pp. 165–178. pls. 6–9.

This article discusses, in a general way, the value of the principal groups of insectivorous birds. The habits or items of food of a number of species are mentioned.

The rabbit as a farm and orchard pest. By D. E. Lantz. pp. 329–342. pls. 37–38. fig. 34.

Seventeen species of raptorial birds are mentioned among the natural enemies of rabbits.

1908.

The economic value of predaceous birds and mammals. By A. K. Fisher. pp. 187–194. pls. 1–3.

The notes on bird food in this article relate principally to hawks, owls, herons, and gulls.

Mouse plagues, their control and prevention. By Stanley E. Piper. pp. 301–310. pls. 21–25.

The natural enemies of *Microtus montanus* are given their due share of attention, a few birds being specifically mentioned. A list is also given of birds killed by poisoned grain laid for the mice.

The relations between birds and insects. By F. E. L. Beal. pp. 343–350.

The principal points made in this paper are that birds are a very important check upon insects and that their true function is not so much to destroy this or that insect pest as it is to lessen the numbers of the insect tribe as a whole. While the bulk of the paper consists of a general discussion of the relations between birds and insects, definite notes on the food of a few species are given.

1909.

Plants useful to attract birds and protect fruit. By W. L. McAtee. pp. 185–196.

This article mentions the plants most useful for attracting fruit-eating birds, and gives lists of species suitable for various sections of the United States. It includes also brief notes on other phases of bird attraction. The favorite foods of a few species of game birds are named.

Pocket gophers as enemies of trees. By David E. Lantz. pp. 209–218. pls. 8–10. fig. 1.

The fact is noted that barn owls and great blue herons are of great value as enemies of pocket gophers.

Introduction of the Hungarian partridge into the United States. By Henry Oldys. pp. 249–258. Pl. 14.

Includes a brief statement of the nature of the food.

INDEX.

Notes relating to a species of bird are brought together under its current scientific name and cross references from the common name, and in some cases from certain once familiar scientific names, are inserted. The scientific names of North American birds correspond with those of the Check-list prepared by a committee of the American Ornithologists' Union, New York, 1910. Subspecies are not separately mentioned, except when the typical subspecies is extralimital or only one subspecies has been treated.

The number of stomachs analyzed is noted in the case of all formal reports, of other original investigations as "Birds of a Maryland Farm" or "Birds of California in Relation to the Fruit Industry," and of those publications including original matter as Farmers' Bulletin 54 and Circular 61. Publications are referred to in the index by the following abbreviations: Bul.—Bulletin, Circ.—Circular, Ent. Circ.—Circular of Division of Entomology, F. Bul.—Farmers' Bulletin, Fauna—N. A. Fauna, Rept.—Annual Report, and Ybk.—Yearbook. The particular bulletin, circular, farmers' bulletin, or fauna is designated by its number, the report or yearbook by the year for which it was issued. Bold-faced figures indicate the pages containing the principal account. The other pages usually contain short notes or merely incidental mention of the food.

A.

Acanthis hornemanni exilipes—Hoary redpoll.
Feeding on aments of alder, Fauna 24, p. 73; seeds of alders (*Alnus incana* and *A. alnobetula*), canoe birch (*Betula papyrifera*), and dwarf birch (*Betula nana*), Fauna 27, p. 418.
Acanthis linaria—Redpoll.
Feeding on weed seeds, Ybk. 1898, pp. 222, 229, 230.
Accipiter atricapillus, see Astur atricapillus.
Accipiter cooperi—Cooper's hawk.
Brief account, Bul. 31, pp. 45, 46; Bul. 38, p. 38; Circ. 61, pp. 3, **17**, 18; Ybk. 1894, pp. 218, **231–232**; Ybk. 1900, p. 429.
Feeding on Beechey's spermophile, Fauna 7, p. 36; bobwhite, Bul. 21, p. 22; birds, Fauna 3, pp. 38, 90; Ybk. 1908, p. 192; Canada grouse, Fauna 22, p. 106; English sparrow, Bul. 1, p. 32; field mice, Bul. **31**, pp. 45, 46; poultry, Bul. 6, p. 39; Bul. 21, p. 22; Ybk. 1908, p. 192; rabbits, Ybk. 1907, p. 336; ruffed grouse, Bul. 24, p. 28; sparrows, Bul. 15, p. 36; spermophiles, Bul. 4, pp. 16–17.
Food at Marshall Hall, Bul. 17, pp. 19, **50–51**, 54, 110.
Food of nestlings, Ybk. 1900, p. 429.
Formal report, Bul. 3, pp. 15, 16, **38–43**, 175 (133 stomachs); Rept. 1887, pp. 402, **405** (46 stomachs).
Injurious, Bul. 12, pp. 30, 36, 49; Bul. 12 (rev.), pp. 32, 33, 43, 58; Bul. 38, p. 10; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Accipiter velox—Sharp-shinned hawk.
Brief account, Bul. 31, pp. 45, 46; Bul. 38, p. 38; Circ. 61, pp. 3, **17–18** (107 stomachs); Ybk. 1894, pp. 218, 231, **232**; Ybk. 1900, p. 429.
Feeding on birds, Ybk. 1908, p. 192; bobwhite, Bul. 21, p. 22; English

Accipiter velox—Continued.
sparrow, Bul. 1, p. 32; field mice, Bul. 31, pp. 45, 46; flicker and Gambel's (intermediate) sparrow, Fauna 19, p. 73; pileolated warbler (*Wilsonia pusilla pileolata*), Fauna 5, p. 94; poultry, Ybk, 1908, p. 192; sparrows, Bul. 15, p. 36; thrush, Fauna 19, p. 72; woodcock, Ybk. 1901, p. 450.
Food at Marshall Hall, Bul. 17, pp. 19, **51–52**, 54, 110.
Formal report, Bul. 3, pp. 15, 16, **32–37**, 38, 43 (159 stomachs); Rept. 1887, pp. 402, **404** (48 stomachs).
Injurious, Bul. 12, pp. 30, 36, 49; Bul. 12 (rev.), pp. 32, 33, 43, 58; Bul. 38, p. 10; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Acredula caudata, see Ægithalos caudatus.
Acridotheres tristis—Common myna.
Economic status, introduction dangerous, etc., Ybk. 1898, pp. 90, 103–104, 107, 109.
Injurious in Hawaii, Bul. 12 (rev.), p. 87; Rept. 1902, p. 213; Ybk. 1899, p. 290.
Protection denied in Hawaii, Bul. 12 (rev.), p. 87.
Actitis macularia—Spotted sandpiper.
Brief account, Bul. 38, p. 32.
Feeding on army worms, Circ. 79, p. 6; cabbage worms, Circ. 79, pp. 7–8; crayfishes, Circ. 79, p. 6; cutworms, Circ. 79, pp. 7–8; grasshoppers, Circ. 79, p. 2; green flies and squash bugs, Circ. 79, pp. 7–8.
Food at Marshall Hall, Bul. 17, pp. 19, 23, 24, 34, 38, **83**.
Food of nestlings, Ybk. 1900, p. 433.
Ægialitis hiaticula—Ringed plover; occurs in Greenland, Circ. 79, p. 2, error for Ægialitis meloda, which see.
Ægialitis meloda—Piping plover.
Feeding on grasshoppers, Circ. 79, p. 2.
Ægialitis nivosa—Snowy plover.
Feeding on *Ephydra hians*, Fauna 7, p. 25.
Ægialitis semipalmata—Ringneck.
Feeding on grasshoppers and mosquitoes, Circ. 79, p. 2.
Ægithalos caudatus—Long-tailed titmouse.
Feeding on scale insects, Ybk. 1906, p. 191.
Agelaius gubernator californicus—Bicolored redwing blackbird.
Food in California, Bul. 34, pp. 56–59 (198 stomachs).
Formal report, Bul. 13, pp. 9, **10, 44–45** (61 stomachs).
Agelaius phœniceus—Redwing blackbird.
Bounty laws, Ybk. 1896, p. 57.
Brief account, Bul. 12, p. 21; Bul. 38, p. 57; F. Bul. 54, pp. 19–21 (725 stomachs); F. Bul. 54 (rev.), pp. 24–26 (1,083 stomachs); Ybk. 1897, pp. 345, 349–351, 353; Ybk. 1900, pp. 422–423.
Damage done, Bul. 12 (rev.), p. 28; Bul. 15, p. 17; Bul. 38, p. 57; Ent. Circ. 20 [p. 2]; Rept. 1886, pp. 242, 246–249; Rept. 1887, pp. 428, 429, 430, 431, 454, 455, 456; Rept. 1900, p. 44; Ybk. 1897, pp. 345, 349–351, 353; Ybk. 1898, p. 230.
Feeding on boll weevils, Bul. 22, pp. 10–11, 16; Bul. 25, pp. 8, 9, 12, 21; Bul. 29, pp. 6, 7, 18, 29, 30; Bul. 38, p. 57; Circ. 64, pp. 3, 5; grain, Fauna 7, p. 74; Rept. 1887, pp. 428, 429, 430, 431, 454, 455, 456; Rept. 1900, p. 44; Ybk. 1897, pp. 345, 349–351, 353; Ybk. 1898, p. 230; rice, Bul. 15, p. 17; Bul. 22, pp. 11, 16; Bul. 38, p. 57; Circ. 5 [p. 1]; Rept. 1886, pp. 234, 242, 246–249; weed seeds, Bul. 29, p. 8; Ybk. 1898, p. 230.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 32, 35, 38, 40, 69, **70, 71, 77, 95–96**, 111 (8 stomachs).
Food in California, Bul. 34, p. 59 (12 stomachs).
Food of nestlings, Ybk. 1900, pp. 422–423.
Formal report, Bul. 13, pp. 8, 9, 11, **33–44** (1,083 stomachs).
Other notes, Bul. 15, p. 29; Bul. 22, pp. 11, 16.
References to studies of food habits, Ybk. 1899, p. 266.
Request for information on economic relations, Ent. Circ. 20 [p. 2]; Circ. 5 [p. 1]; Rept. 1886, p. 234.
Agelaius tricolor—Tricolored redwing blackbird.
Food in California, Bul. 34, p. 59 (16 stomachs).
Aix sponsa—Wood duck.
Brief account, Bul. 38, p. 20; Ybk. 1901, p. 455.
Food of nestlings, Ybk. 1900, p. 435.
Vegetable food, Circ. 81, pp. 1, 2.
Alauda arvensis—Skylark.
Admission denied, Rept. 1908, p. 581.
Brief account, Bul. 23, p. 11.
Economic status, introduction dangerous, etc., Ybk. 1898, pp. 90, 106, 107, 109.
Injurious in New Zealand, Ybk. 1909, p. 257.
Pulling grain, Bul. 1, p. 341.
Sale in market, Bul. 23, p. 11.
Aluco flammeus—Old-world barn owl.
Enemy of field mice, Bul. 31, pp. 46–47, 48.
Aluco pratincola—American barn owl.
Beneficial, Ybk. 1895, p. 590; 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 31, pp. 46, 47, 48; Bul. 38, p. 41; Circ. 61, pp. 3,

Aluco pratincola—Continued.
10–11 (200 pellets); Ybk. 1894, pp. 217, 223–224; Ybk. 1900, pp. 301, 430.
Feeding on bats, Fauna 7, p. 42; black rat, Bul. 33, pp. 34–35; Brewer's blackbird, Bul. 5, p. 21; Ybk. 1909, p. 217; brown rat, Bul. 33, pp. 34–35; chipmunk (dead), Fauna 7, p. 42; field mice, Bul. 31, pp. 46, 47, 48; Ybk. 1905, pp. 371, 372; jackrabbit, Bul. 8, p. 44; pocket gopher, Bul. 5, pp. 20–21; Ybk. 1909, p. 217; (dead) Fauna 7, p. 42; spermophiles, Bul. 4, p. 16.
Food of nestlings, Ybk. 1900, p. 430.
Formal report, Bul. 3, pp. 11, 13–14, 132–139 (39 stomachs); Rept. 1887, p. 417 (7 stomachs).
Relation to orchards, Ybk. 1900, p. 301.
Amazilia graysoni, see Amizilis graysoni.
Amizilis graysoni — Grayson's humming bird.
Insect food and feeding habits, Fauna 14, p. 45.
Amazona oratrix — Double yellow-headed parrot.
Feeds on pods of *Pithecolobium dulce* and other fruits, Fauna 14, pp. 39–40.
Ammodramus caudacutus, see Passerherbulus caudacutus.
Ammodramus henslowi, see Passerherbulus henslowi.
Ammodramus maritimus, see Passerherbulus maritimus.
Ammodramus nelsoni, see Passerherbulus nelsoni.
Ammodramus savannarum australis—Grasshopper sparrow.
Feeding on weed seeds, Ybk. 1898, pp. 222, 223, 226, 227, 228.
Food at Marshall Hall, Bul. 17, pp. 13, 14, 26, 30, 32, 35, 38, 40, 44, 49, 70, 71, 72, 73, 97, 110 (10 stomachs).
Food of adults and nestlings, Ybk. 1900, p. 419.
Formal report, Bul. 15, pp. 21, 23, 24, 28, 34, 45, 61–63, 91, 92 (170 stomachs).
Ammodramus savannarum passerinus, see Ammodramus savannarum australis.
Ampelis cedrorum, see Bombycilla cedrorum.
Ampelis garrulus, see Bombycilla garrula.
Anas boschas, see Anas platyrhynchos.
Anas obscura, see Anas rubripes.
Anas platyrhynchos—Mallard.
Brief account, Bul. 38, p. 17.
Feeding on grasshoppers, Fauna 7, p. 15.
Food of nestlings, Ybk. 1900, p. 435.
Vegetable food, Circ. 81, pp. 1, 2, 8.
Anas rubripes—Black duck.
Vegetable food, Circ. 81, pp. 1, 2, 8.
Anhinga anhinga—Water-turkey.
Harmless, Bul. 38, p. 15.
Anthus pensylvanicus, see Anthus rubescens.
Anthus rubescens—Pipit.
Brief account, Bul. 38, p. 84.
Feeding on boll weevil, Bul. 22, pp. 8–9, 16; Bul. 25, pp. 9, 14, 21; Bul. 29, pp. 6, 22–23, 30; Bul. 38, pp. 9, 84; Circ. 57, p. 4; Circ. 64, pp. 4, 5; Rept. 1908, p. 576.
Antrostomus carolinensis — Chuck-will's-widow.
Brief account, Bul. 38, p. 50.
Antrostomus vociferus—Whippoorwill.
Brief account, Bul. 38, p. 50.
Food at Marshall Hall, Bul. 17, p. 19.
Aphelocoma californica—California jay.
Brief account, F. Bul. 54 (rev.), pp. 19–21 (141 stomachs).
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 34, pp. 8, 47, 50–56 (326 stomachs).
Relation to fruit in California, Bul. 30, p. 13; Rept. 1901, p. 153; Ybk 1904, pp. 246, 248–250.
Aphelocoma woodhousei—Woodhouse's jay.
Feeding on piñon nuts, Fauna 3, pp. 39, 94.
Aquila chrysaëtos—Golden eagle.
Brief account, Circ. 61, pp. 3, 13, 14; Rept. 1887, p. 413; Ybk. 1894, pp. 217, 227.
Compiled information, Bul. 27, pp. 20–31.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on Abert's squirrel (*Sciurus aberti*), Fauna 3, p. 90; Beechey's spermophile (*Citellus beecheyi*), Circ. 76, pp. 7, 8; dusky grouse (probably), Fauna 7, p. 39; jack rabbits, Bul. 8, p. 44; (*Lepus texianus*) Fauna 25, p. 154; lambs of mountain sheep (probably), Fauna 30, p. 60; prairie dogs (watching for), Fauna 3, p. 90; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, p. 16; varying hares, Fauna 27, p. 359; woodchucks (probably), Fauna 7, p. 39; (*Marmota monax canadensis*) Fauna 27, p. 359.
Formal report, Bul. 3, pp. 15, 93–97 (6 stomachs).
Protected in some States, Ybk. 1899, p. 266.
Archibuteo ferrugineus—Squirrel hawk.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 3, pp. 11, 91–93; Circ. 61, pp. 3, 4–6; Ybk. 1894, pp. 217, 219, 220.
Feeding on brown rat, Bul. 33, p. 34; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, pp. 15, 16.
Other notes, Bul. 31, p. 44.

Archibuteo lagopus lagopus—Old-world rough-legged hawk.
Feeding on field mice, Bul. 31, p. 44.
Archibuteo lagopus sancti-johannis—Rough-legged hawk.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 31, p. 44; Circ. 61, pp. 3, **4–5**; Ybk. 1894, pp. 217, **219–220**; Ybk. 1900, p. 301.
Feeding on brown rat, Bul. 33, p. 34; field mice, Bul. 31, p. 44; Ybk. 1905, p. 371; (*Microtus montanus*) F. Bul. 352, p. 22; ground squirrel (*Citellus plesius*, probably), Fauna 30, p. 88; rabbits, Ybk. 1907, p. 336.
Formal report, Bul. 3, pp. 11, **86–91**, 92 (49 stomachs); Rept. 1887, p. 413 (28 stomachs).
Relation to orchards, Ybk. 1900, p. 301.
Archilochus colubris—Ruby-throated humming bird.
Food at Marshall Hall, Bul. 17, pp. 19, 39, **91**.
Food of adults and nestlings, Ybk. 1900, p. 427.
Ardea cærulea, see Florida cærulea.
Ardea candidissima, see Egretta candidissima.
Ardea herodias—Great blue heron.
Brief account, Bul. 38, p. 25; Ybk. 1908, p. 193.
Feeding on field mice, Bul. 31, p. 52; Ybk. 1909, p. 217; pocket gophers, Ybk. 1908, p. 193; Ybk. 1909, p. 217.
Food at Marshall Hall, Bul. 17, pp. 19, 53.
Injurious to fish, exempted from protection in Vermont, Bul. 12 (rev.), p. 43.
Ardea virescens, see Butorides virescens.
Ardetta exilis, see Ixobrychus exilis.
Arenaria interpres—Turnstone.
Feeding on beetles and other insects, Fauna 27, p. 336; crowberries, Ybk. 1903, p. 377; grasshoppers, Circ. 79, p. 2.
Feeds on caterpillars and cutworms, protected in Hawaii, Bul. 12 (rev.), p. 87.
Arquatella maritima—Purple sandpiper.
Feeding on Nereis, Circ. 79, p. 8.
Food of adults and nestlings, Ybk. 1900, p. 432.
Asio accipitrinus, see Asio flammeus.
Asio flammeus—Short-eared owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670;
Brief account, Bul. 31, pp. 47, 48, 53; Circ. 61, pp. 3, **11**; Ybk. 1894, pp. 217, **224–225**.
Feeding on cotton rat (*Sigmodon hispidus texianus*), Fauna 25, p. 117; field mice, Bul. 31, pp. 47, 48, 53; Ybk. 1905, pp. 371, 372; (*Microtus*
Asio flammeus—Continued.
drummondi) Fauna 27, p. 368; mice, Fauna 19, p. 76; rabbits, Ybk. 1907, p. 336; shrews, Fauna 19, p. 76.
Food at Marshall Hall, Bul. 17, pp. 54–55, **86**.
Formal report, Bul. 3, pp. 11, 14, **145–149** (101 stomachs); Rept. 1887, 418 (45 stomachs); Rept. 1888, pp. 496–498 (50 stomachs).
Asio otus—Old-world long-eared owl.
Brief account, feeding on field mice, Bul. 31, pp. 47, 48.
Asio wilsonianus—American long-eared owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 31, pp. 47, 48; Bul. 38, pp. 41–42; Circ. 61, pp. 3, **11**; Ybk. 1894, pp. 217, **224**; Ybk. 1900, p. 430.
Feeding on field mice, Bul. 31, pp. 47, 48; Ybk. 1905, p. 371, (*Microtus drummondi*) Fauna 27, p. 367; rabbits, Ybk. 1907, p. 336; red-backed mice (*Evotomys dawsoni*), Fauna 27, p. 367.
Formal report, Bul. 3, pp. 11, 14, **140–145**, 165 (107 stomachs); Rept. 1887, pp. 417–418 (47 stomachs).
Astragalinus psaltria hesperophilus—Green-backed goldfinch.
Feeding on seeds of wild sunflower, Fauna 7, p. 84.
Food in California, Bul. 34, pp. **73–75**, 85 (476 stomachs).
Astragalinus tristis—Goldfinch.
Brief account, Bul. 38, p. 61.
Damage to oats, Bul. 15, p. 11.
Feeding on mulberries, Rept. 1890, p. 285; weed seeds, Bul. 15, pp. 39, 42; Ybk. 1898, pp. 222, 224, 225, 229, 232.
Food at Marshall Hall, Bul. 17, pp. **14–15**, 26, 69, 71, **75–76**, 79, **97** (11 stomachs).
Food in California, Bul. 34, pp. **71–73**, 85 (84 stomachs); [also in East, p. 71].
Astur atricapillus—Goshawk.
Brief account, Circ. 61, pp. 3, **17**; Ybk. 1894, pp. 218, **231**; Ybk. 1900, p. 429.
Feeding on bobwhite, Bul. 21, p. 22; ground squirrel (probably), Fauna 19, p. 73; poultry, Bul. 21, p. 22; Fauna 5, p. 94; ptarmigan, Fauna 27, p. 354; (*Lagopus lagopus*) Fauna 27, p. 346; rabbits, Ybk. 1907, p. 336; ruffed grouse, Bul. 24, p. 28; Fauna 27, p. 354; squirrel (*Sciurus*), Fauna 21, p. 76; varying hare, Fauna 27, p. 353.
Formal report, Bul. 3, pp. **15**, **43–46**, 175 (28 stomachs); Rept. 1887, 405 (6 stomachs).

Astur atricapillus—Continued.
Injurious, Bul. 12, pp. 30, 49; Bul. 12 (rev.), pp. 33, 58; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670; Ybk. 1908, p. 192.
Other notes, Fauna 5, pp. 18, 94.
Asturina plagiata—Mexican goshawk.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, 85–86.
Asyndesmus lewisi—Lewis's woodpecker.
Feeding on grasshoppers, Fauna 7, p. 50.
Food in California, Bul. 34, pp. 28–29 (23 stomachs).
Formal report, Bul. 37, pp. 10, 45–47 (59 stomachs).
Asyndesmus torquatus, see Asyndesmus lewisi.
Auklet, Paroquet, see Phaleris psittacula.
Avocet, see Recurvirostra americana.

B.

Bæolophus atricristatus—Black-crested titmouse.
Feeding on boll weevil, Bul. 22, pp. 9, 16; Bul. 25, pp. 9, 14, 15, 21; Bul. 29, pp. 6, 22, 30; Circ. 64, p. 5.
Bæolophus bicolor—Tufted titmouse.
Brief account, Bul. 38, p. 89; F. Bul. 54 (rev.), p. 44 (a mere reference).
Feeding on boll weevil, Bul. 29, pp. 6, 22, 28, 30; Circ. 64, pp. 4, 5; scale insects, Ybk. 1906, p. 197.
Food habits at Marshall Hall, Bul. 17, pp. 20, 61, 107.
Bæolophus inornatus—Plain titmouse.
Feeding on noxious insects. Ybk. 1904, p. 253; scale insects. Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 68–70 (76 stomachs).
Bæolophus wollweberi—Bridled titmouse.
Feeding on scale insects, Ybk. 1906, p. 197.
Baldpate, see Mareca americana.
Bartramia longicauda—Upland plover.
Brief account, Bul. 38, pp. 31–32.
Economic value, Bul. 22, pp. 15–16; Circ. 79, p. 6.
Feeding on billbugs, Circ. 79, p. 6; boll weevil, Bul. 29, pp. 6, 7, 11, 20, 29, 30; Bul. 38, p. 32; Circ. 64, pp. 2, 5; Circ. 79, p. 6; click beetles, clover leaf weevil, clover root weevil, corn-leaf beetle, cotton worm, cotton cutworm, cowpea weevil, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; crayfishes, cutworms, grapevine colaspis, Circ. 79, p. 6; grasshoppers, Circ. 79, p. 2; Fauna 27, p. 328; wireworms, Circ. 79, p. 6.
Bee martin, see Tyrannus tyrannus.
Bengalee, see Uroloncha acuticauda.
Bittern, see Botaurus lentiginosus.
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Blackbird, Bicolored redwing, see Agelaius gubernator californicus.
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Brewer's, see Euphagus cyanocephalus.
Crow, see Quiscalus quiscula.
European, see Turdus merula.
Redwing, see Agelaius phœniceus.
Rusty, see Euphagus carolinus.
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Yellow-headed, see Xanthocephalus xanthocephalus.
Blackjack, see Marila collaris.
Bluebill, Big, see Marila marila.
Little, see Marila affinis.
Bluebird, see Sialia sialis.
Mountain, see Sialia currucoides.
Western, see Sialia mexicana occidentalis.
Bobolink, see Dolichonyx oryzivorus.
Bobwhite, see Colinus virginianus.
Masked, see Colinus ridgwayi.
Bombycilla cedrorum—Cedar bird.
Brief account, Bul. 38, p. 72; F. Bul. 54, pp. 31–32 (152 stomachs); F. Bul. 54 (rev.), pp. 38–39 (152 stomachs); Ybk. 1900, p. 304.
Feeding on cherries, Bul. 32, p. 91; Bul. 34, p. 55; Ybk. 1907, p. 175; grape (*Vitis californica*), Fauna 7, p. 113; insects, Fauna 27, p. 459; mahaleb cherry (*Prunus mahaleb*), Bul. 32, p. 65; mulberries, Bul. 32, pp. 64, 65; Fauna 7, p. 113; Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 17, 23, 24, 30, 43, 56, 59, 60, 62, 99 (5 stomachs).
Food of nestlings, Ybk. 1900, pp. 417, 436.
Formal report, Rept. 1892, pp. 197–200 (125 stomachs).
Frugivorous habits (other than above noted), Bul. 30, p. 20; Rept. 1890, p. 281.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, p. 304.
Bombycilla garrula—Bohemian waxwing.
Feeding on berries and insects, Fauna 19, p. 89.
Bonasa umbellus—Ruffed grouse.
Brief account, Ybk. 1909, p. 194.
Feeding on buds, Ybk. 1907, p. 172; of balsam poplar, Fauna 27, pp. 340, 542; of *Lepargyrea* and *Salix*, Fauna 27, pp. 341, 342; catkins of willows, Fauna 27, p. 341; foliage, Bul. 21, p. 52; of *Populus balsam-*

Bonasa umbellus—Continued.
ifera and *Pyrola*, Fauna 27, p. 342; of willow, Fauna 27, 341; grass seeds, Fauna 27, p. 341; heads and shoots of *Equisetum*, Fauna 27, pp. 341, 342; potato beetle, Bul. 32, p. 47; rose hips, Fauna 27, p. 341; weed seeds, Ybk. 1898, p. 231.
Formal report, Bul. 24, pp. 17, 23, 25–38 (208 stomachs).
Booby, Blue-footed, see Sula nebouxi.
Botaurus lentiginosus—Bittern.
Brief account, Bul. 38, p. 24; Ybk. 1908, p. 193.
Feeding on field mice, Bul. 31, p. 52; frogs and large beetles, Fauna 27, p. 311; injurious rodents, Ybk. 1908, p. 193.
Branta canadensis—Canada goose.
Brief account, Bul. 38, p. 23.
Feeding on berries of *Empetrum nigrum*, Fauna 27, p. 306.
Bubo virginianus—Great horned owl.
Bounty laws, Ybk. 1899, p. 281.
Brief account, Bul. 31, p. 49; Bul. 38, pp. 43–44; Circ. 61, pp. 3, 13, **15–16**, 18; Ybk. 1894, pp. 217, 227, **229**; Ybk. 1900, pp. 300–301, 430.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on brown bat (*Vespertilio fuscus*), Fauna 25, p. 211; brown rat, Bul. 33, p. 35; field mice, Bul. 31, p. 49; Fauna 5, pp. 19, 96; Ybk. 1905, p. 371; Ybk. 1908, p. 188; (*Microtus drummondi*) Fauna 27, pp. 372, 374; ground squirrels, Fauna 19, p. 76; jack rabbits, Bul. 8, p. 44; (*Lepus texianus*) Fauna 25, p. 154; lemming mouse (*Phenacomys orophilus*), Fauna 5, pp. 19, 96; pocket gophers, Bul. 5, pp. 20–21; (*Cratogeomys castanops*) Fauna 25, p. 133; (*Thomomys*) Fauna 5, pp. 19, 96; poultry, Bul. 2, p. 122; Bul. 21, p. 22; rabbits, Bul. 2, p. 122; Fauna 19, p. 76; Ybk. 1900, pp. 300–301; Ybk. 1907, p. 336; Ybk. 1908, p. 188; (*Lepus arizonæ minor*) Fauna 25, p. 159; red squirrels, Fauna 19, p. 76; (*Sciurus hudsonicus*) Fauna 27, p. 372; ruffed grouse, Bul. 24, p. 28; scorpion, Fauna 7, p. 43; shrews (*Sorex personatus*), Fauna 27, p. 372; skunks, Bul. 2, p. 122; (*Spilogale leucoparia*) Fauna 25, p. 198; spermophiles, Bul. 4, pp. 16–17; varying hares (*Lepus americanus*), Fauna 27, pp. 373, 374; water beetles (*Dytiscus dauricus*), Fauna 27, p. 373; white-footed mice, Fauna 5, pp. 19, 96; (*Peromyscus arcticus*) Fauna 27, p. 372; wood rats (*Neotoma*), Fauna 7, p. 43; (*Neotoma micropus*) Fauna 25, p. 112.
Bubo virginianus—Continued.
Food at Marshall Hall, Bul. 17, pp. 19, **52**, 54, **86**, 110.
Food of nestlings, Ybk. 1900, pp. 430–431.
Formal report, Bul. 3, pp. 15, **174–182** (127 stomachs); Rept. 1887, pp. 402, **421** (30 stomachs).
Injurious, Bul. 12, pp. 30, 36, 49; Bul. 12 (rev.), pp. 32, 33, 43, 58; Ybk. 1907, p. 167.
Other notes, Fauna 5, p. 18.
Relation to orchards, Ybk. 1900, pp. 300–301.
Bufflehead, see Charitonetta albeola.
Bunting, Indigo, see Passerina cyanea.
Painted, see Passerina ciris.
Snow, see Plectrophenax nivalis.
Yellow, see Emberiza citrinella.
Bush tit, see Psaltriparus minimus.
Butcher bird, Big, see Lanius borealis.
European great, see Lanius excubitor.
Little, see Lanius ludovicianus.
Buteo abbreviatus—Zone-tailed hawk.
Formal report, Bul. 3, p. 71 (5 stomachs).
Buteo albicaudatus sennetti — Sennett's white-tailed hawk.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, 72.
Feeding on rabbits, Ybk. 1907, p. 336.
Buteo borealis—Red-tailed hawk.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 31, p. 43; Bul. 38, p. 38; Circ. 61, pp. 3, **6–7**; Rept. 1888, p. 480; Ybk. 1894, pp. 217, **220–221**; Ybk. 1900, p. 429.
Feeding on brown rat, Bul. 33, p. 34; chipmunks (*Tamias cinereicollis* and *T. lateralis*), Fauna 3, p. 90; dove (attempt to pick up wounded one), Fauna 7, p. 37; field mice, Bul. 31, p. 43; Ybk. 1905, p. 371; Ybk. 1908, p. 187; (*Microtus montanus*) F. Bul. 352, p. 22; grasshoppers, Bul. 3, p. 76; Fauna 7, p. 37; ground squirrel, Fauna 19, p. 73; horned larks, Bul. 23, p. 12; jack rabbits, Bul. 8, p. 44; Jerusalem cricket (*Stenopelmatus*), lizards (*Cnemidophorus tigris* and *Sauromalus ater*), Fauna 7, p. 37; (iguanas) Fauna 14, p. 37; pocket gophers, Bul. 5, p. 20; (*Thomomys*) Fauna 7, p. 37; potato beetle, Bul. 32, p. 47; rabbits, Ybk. 1907, p. 336; (*Lepus graysoni*) Fauna 14, pp. 17, 37; spermophiles, Bul. 4, pp. 15, 16, 17; (*Spermophilus terticaudus*) Fauna 7, p. 37; (*Spermophilus townsendi*) Fauna 25, p. 94; squirrel

Buteo borealis—Continued.
(*Sciurus aberti*), Fauna 3, p. 90; varying hares (apparently), Fauna 27, p. 356.
Food at Marshall Hall, Bul. 17, pp. 19, **54.**
Food of nestlings, Ybk. 1900, p. 429.
Formal report, Bul. 3, pp. 11, 12, **48–62,** 87 (562 stomachs); Rept. 1887, pp. 405–410 (311 stomachs).
Buteo brachyurus—Short-tailed hawk.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **83–84.**
Buteo buteo—Common old-world buzzard hawk.
Feeding on field mice, Bul. 31, p. 44.
Buteo latissimus, see Buteo platypterus.
Buteo lineatus—Red-shouldered hawk.
Beneficial, Bul. 12, p. 30; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Bul. 31, p. 43; Bul. 38, p. 39; Circ. 61, pp. 3, 6, **7–8;** Ybk. 1894, pp. 217, 220, **221;** Ybk. 1900, p. 429.
Feeding on brown rat, Bul. 33, p. 34; field mice, Bul. 31, p. 43; Ybk. 1905, p. 371; frogs (watching for), Fauna 7, p. 38; horned larks, Bul. 23, p. 12; rabbits, Ybk. 1907, p. 336; ruffed grouse, Bul. 24, p. 28.
Food at Marshall Hall, Bul. 17, pp. 19, 54, **86.**
Formal report, Bul. 3, pp. 11, 12, **62–70** (220 stomachs); Rept. 1887, pp. 410–412 (102 stomachs).
Buteo platypterus—Broad-winged hawk.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 31, p. 43; Bul. 38, p. 39; Circ. 61, pp. 3, **9;** Ybk. 1894, pp. 217, **222–223.**
Feeding on brown rat, Bul. 33, p. 34; field mice, Bul. 31, p. 43; Ybk. 1905, p. 371.
Food at Marshall Hall, Bul. 17, pp. 19, 32, **86,** 101.
Food of nestlings, Ybk. 1900, p. 429.
Formal report, Bul. 3, pp. 11, 13, **79–83** (65 stomachs); Rept. 1887, pp. 412–413 (22 stomachs).
Buteo swainsoni—Swainson's hawk.
Beneficial, Bul. 12, p. 30; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Bul. 31, p. 43; Circ. 61, pp. 3, **8–9;** Ybk. 1894, pp. 217, **222.**
Feeding on brown rat, Bul. 33, p. 34; field mice, Bul. 31, p. 43; (*Microtus montanus*) F. Bul. 352, p. 22; grasshoppers, Fauna 5, p. 95; Ybk. 1895, p. 422; Ybk. 1907, p. 166; (*Camnula pellucida*) Fauna 7, p. 38; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, pp. 15, 16, **17.**
Formal report, Bul. 3, pp. 11, 12, 13, **72–79** (18 stomachs); Rept. 1887, p. 412 (4 stomachs).
Butorides virescens—Green heron.
Brief account, Bul. 38, p. 26.
Food at Marshall Hall, Bul. 17, pp. 19, 23, 24, **53, 81.**
Food of nestlings, Ybk. 1900, p. 435.
Injurious to fish, exempt from protection in Alabama and Pennsylvania, Bul. 12, p. 36; Bul. 12 (rev.), p. 43.
Buzzard, Black, see Catharista urubu.
Turkey, see Cathartes aura septentrionalis.
Buzzard hawk, Common, see Buteo buteo.
Rough-legged, see Archibuteo lagopus lagopus.

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Calcarius lapponicus—Lapland longspur.
Feeding on weed seeds, Ybk. 1898, p. 226.
Formal report, Bul. 15, pp. 45, **54–55** (113 stomachs).
Calcarius ornatus—Chestnut-collared longspur.
Feeding on weed seeds, Ybk. 1898, p. 226.
Pulling wheat, Bul. 23, p. 16.
Calcarius pictus—Smith's longspur.
Feeding on weed seeds, Ybk. 1898, p. 226.
Callipepla squamata—Scaled quail.
Formal report, Bul. 21, pp. 61–63 (47 stomachs).
Campephilus principalis—Ivory-billed woodpecker.
Brief account, Bul. 37, pp. 62–63.
Useful, Bul. 38, p. 46.
Canachites canadensis—Spruce grouse.
Feeding on bearberries (*Arctostaphylos uva-ursi*), Fauna 27, p. 338; blueberries, Fauna 21, p. 75; (*Vaccinium uliginosum*), fern (*Cryptogramma acrostichoides*), Fauna 27, p. 338; heads of Equisetum, Fauna 21, p. 75; highbush cranberries (*Viburnum*), Fauna 21, p. 75; Fauna 30, p. 86; mountain cranberries (*Vitis-idæa vitis-idæa*), Fauna 24, p. 65; Fauna 27, p. 338; pine needles (*Pinus divaricata*), snails (*Lymnæa palustris*), Fauna 27, p. 338; spruce needles, Fauna 21, p. 75; Fauna 24, p. 65; (*Picea canadensis*) Fauna 27, p. 338.
Formal report, Bul. 24, pp. **38–40,** 42 (8 stomachs).
Canachites franklini—Franklin's grouse.
Brief account, Bul. 24, p. 40.
Canvasback, see Marila valisineria.

Capercaillie, see Tetrao urogallus.
Caracara, see Polyborus cheriway.
Carancho, see Polyborus tharus.
Cardinalis cardinalis—Cardinal.
Brief account, Bul. 38, p. 67; F. Bul. 456. pp. 9, 12.
Feeding on boll weevil, Bul. 25, pp. 9, 12, 20–21; Bul. 29, pp. 6, 19, 26, 30; Circ. 64, p. 5; fruit seeds, Bul. 15, pp. 74, 88; potato beetle, Bul. 32, p. 47; scale insects, Ybk. 1906, p. 192; weed seeds, Bul. 15, pp. 38–39; Ybk. 1898, p. 230.
Food at Marshall Hall, Bul. 17, pp. 18, 21, 24, 25, 30, 31, 32, 34, 35, 38, 59, 60, 61, 62, 70, 71, **77, 98** (10 stomachs).
Formal report, Bul. 32, pp. **5–27,** 28, 90, 91 (498 stomachs).
Carpodacus mexicanus frontalis—House finch.
Brief account, F. Bul. 54 (rev.), pp. 33–34 (987 stomachs); Ybk. 1900, pp. 302–303.
Damaging fruit, Rept. 1900, p. 47; Rept. 1901, p. 153; peaches, Fauna 7, pp. 80, 81.
Feeding on cherries, Bul. 34, p. 55; weed seeds, Bul. 34, p. 85.
Food in California, Bul. 30, pp. 12, **13–23,** 86 (1,206 stomachs).
Injurious, Bul. 34, p. 8; Rept. 1900, p. 47; Rept. 1901, p. 153; Ybk. 1898, p. 107.
Relation to fruit in California, Ybk. 1904, pp. 245, 246–248.
Relation to orchards, Ybk. 1900, pp. 302–303.
Carpodacus purpureus—Purple finch.
Brief account, Bul. 38, p. 61; Ybk. 1900, p. 302.
Feeding on buds, Ybk. 1907, p. 173; climbing false buckwheat, Bul. 15, p. 42; mulberries, Rept. 1890, p. 285; ragweed, Bul. 15, p. 42.
Food at Marshall Hall, Bul. 17, pp. 20, 62, **76–77, 97.**
Relation to orchards, Ybk. 1900, p. 302; Ybk. 1907, p. 173.
Catarina, see Psittacula insularis.
Catbird, see Dumetella carolinensis.
Catharista atrata, see Catharista urubu.
Catharista urubu—Black buzzard.
Brief account, Bul. 38, p. 36.
Feeding on carrion, Bul. 2, p. 110; Rept. 1888, p. 524.
Protected on account of useful feeding habits, Bul. 12, p. 29; Bul. 12 (rev.), p. 32.
Cathartes aura septentrionalis—Turkey buzzard.
Brief account, Bul. 38, p. 36.
Feeding on carrion, Bul. 2, p. 110; Circ. 76, pp. 9–10; Fauna 7, pp. 33, 34; Fauna 25, p. 201; Rept. 1888, p. 524.
Cathartes aura septentrionalis—Continued.
Food at Marshall Hall, Bul. 17, pp. 19, **53–54,** 85.
Food of young in captivity, Ybk. 1900, p. 431.
Protected on account of useful feeding habits, Bul. 12, p. 29; Bul. 12 (rev.), p. 32.
Catherpes mexicanus punctulatus—Dotted cañon wren.
Brief account, Bul. 30, pp. 65–66.
Cedar bird, see Bombycilla cedrorum.
Centrocercus urophasianus—Sage hen.
Brief account, Bul. 24, pp. 23–25.
Flesh favored with sage, Fauna 5, p. 93.
Centurus aurifrons—Golden-fronted woodpecker.
Brief account, Bul. 37, pp. 63, 64.
Damage to poles, Bul. 39, p. 10.
Centurus carolinus—Red-bellied woodpecker.
Brief account, Bul. 38, p. 48.
Damage to buildings, Bul. 39, p. 13; poles, Bul. 39, p. 11.
Formal report, Bul. 7, pp. 8, 10, 11, 23, **25–27** (22 stomachs); Bul. 37, pp. 10, 43, **47–52** (271 stomachs).
Reference to vegetarian tastes, Bul. 34, p. 23.
Relation to orchards, Ybk. 1900, p. 295.
Centurus uropygialis—Gila woodpecker.
Brief account, Bul. 37, pp. 63, 64.
Damage to poles, Bul. 39, pp. 10, 11.
Ceophlœus pileatus, see Phlœotomus pileatus.
Certhia familiaris americana—Brown creeper.
Brief notes, Bul. 38, p. 88; Ybk. 1908, p. 346.
Feeding on scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 32, 34, 35, **107.**
Relation to orchards, Ybk. 1900, pp. 296–297.
Certhia familiaris familiaris—Tree creeper.
Feeding on scale insects, Ybk. 1906, p. 191.
Certhia familiaris occidentalis—California creeper.
Feeding on codling moth, Bul. 34, pp. 17, 70.
Food in California, Bul. 30, p. 66 (7 stomachs).
Ceryle alcyon—Belted kingfisher.
Brief account, Bul. 38, p. 45; Ybk. 1900, p. 428.
Feeding on eelpout (*Lota maculosa*), Fauna 27, p. 378.
Food at Marshall Hall, Bul. 17, pp. 19, **53,** 87–88 (5 stomachs).
Food of nestlings, Ybk. 1900, pp. 411, 428.

Ceryle alcyon—Continued.
Injurious to fish, exempt from protection in certain States, Bul. 12, pp. 36, 37; Bul. 12 (rev.), p. 43.
Chæmepelia passerina terrestris—Ground dove.
Feeding on weed seeds, Ybk. 1898, p. 232.
Chætura pelagica—Chimney swift.
Feeding on mosquitoes, Bul. 38, p. 9; Rept. 1908, p. 577.
Food at Marshall Hall, Bul. 17, pp. 24, 25, 35, 39, 40, 91.
Insectivorous, Bul. 38, p. 9.
Chaffinch, see Fringilla cœlebs.
Chamæa fasciata—Wren tit.
Feeding on scale insects, Ybk. 1906, pp. 194, 195.
Food in California, Bul. 30, pp. 71–74 (165 stomachs).
Charadrius dominicus—Golden plover.
Feeding on crowberries (*Empetrum nigrum*), Fauna 27, pp. 332, 333; Ybk. 1903, p. 377; grasshoppers, Circ. 79, p. 2.
Feeds on caterpillars and cutworms, protected in Hawaii, Bul. 12 (rev.), p. 87.
Charitonetta albeola—Bufflehead.
Vegetable food, Circ. 81, p. 1.
Chat, yellow-breasted, see Icteria virens.
Chaulelasmus streperus—Gadwell.
Brief account, Bul. 38, p. 18.
Vegetable food, Circ. 81, p. 1.
Chelidon erythrogaster, see Hirundo erythrogastra.
Chelidon urbica, see Chelidonaria urbica.
Chelidonaria urbica—Old-world martin.
Value as insect destroyer, Bul. 1, pp. 330, 332, 333, 336, 346; Rept. 1886, p. 244.
Chen hyperboreus—Snow goose.
Feeding on club-rush, Fauna 7, p. 18; crowberries (*Empetrum nigrum*), Fauna 27, pp. 298, 301.
Chickadee, Black-capped, see Penthestes atricapillus.
Carolina, see Penthestes carolinensis.
Chestnut-backed, see Penthestes rufescens.
Mountain, see Penthestes gambeli.
Chloris chloris—Greenfinch.
Economic status, introduction dangerous, etc., Ybk. 1898, pp. 90, 106, 107, 109.
Feeding on caterpillars and corn, Bul. 1, p. 343.
Chondestes grammacus—Lark sparrow.
Brief account, Bul. 38, p. 63.
Feeding on boll weevil, Bul. 25, pp. 9, 12, 18, 21; Bul. 29, pp. 6, 19, 30; Circ. 64, p. 5; weed seeds, Ybk. 1898, pp. 226, 227, 228, 229.
Chondestes grammacus—Continued.
Formal report, Bul. 15, pp. 24, **27, 28, 45, 66–68,** 91, 92 (167 stomachs).
Chordeiles acutipennis texensis — Texas nighthawk.
Feeding on *Ephydra hians,* Fauna 7, p. 53.
Chordeiles virginianus—Nighthawk.
Brief account, F. Bul. 54 (rev.), pp. 13–14 (about 100 stomachs).
Feeding on boll weevil, Bul. 25, pp. 8, 9, 13, 20, 21; Bul. 29, pp. 6, 21, 25, 30; Bul. 38, pp. 9, 51; Circ. 57, pp. 1, 4; Circ. 64, p. 5; Rept. 1906, p. 404; mosquitoes, Bul. 38, p. 9; Rept. 1908, p. 577; potato beetle, Bul. 32, p. 47.
Food at Marshall Hall, Bul. 17, pp. 19, 33, 91.
Useful, Ybk. 1904, p. 514.
Chuck-will's-widow, see Antrostomus carolinensis.
Ciconia ciconia—White stork.
Feeding on field mice, Bul. 31, p. 53.
Ciconia maguari, see Euxenura maguari.
Circus hudsonius—Marsh hawk.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 31, p. 43; Bul. 38, p. 37; Circ. 61, pp. 3, **6;** Ybk. 1894, pp. 217, **220;** Ybk. 1900, pp. 301, 429.
Feeding on brown rat (probably), Bul. 33, p. 34; chipmunk (*Tamias minimus pictus*), Fauna 5, p. 94; cotton rat (*Sigmodon hispidus texianus*), Fauna 25, pp. 116, 117; field mice, Bul. 4, p. 15; Bul. 31, p. 43; Fauna 7, p. 35; Ybk. 1905, p. 371; horned larks, Bul. 23, p. 12; jackrabbits, Bul. 8, p. 44; pocket gophers, Bul. 5, p. 20; rabbits, Bul. 4, p. 15; Ybk. 1907, p. 336; spermophiles, Bul. 4, pp. 15, 16, 17; (*Spermophilus townsendi*), shrew (*Neosorex*), Fauna 5, p. 94; squirrels, Bul. 4, p. 15.
Food at Marshall Hall, Bul. 17, pp. 54, **55, 86.**
Food of nestlings, Ybk. 1900, p. 429.
Formal report, Bul. 3, pp. 11, 12, **26–32,** 134 (124 stomachs); Rept. 1887, pp. 403–404 (46 stomachs); Rept. 1889, pp. 370–372.
Relation to orchards, Ybk. 1900, p. 301.
Cistothorus palustris, see Telmatodytes palustris.
Clangula clangula americana—Golden-eye.
Vegetable food, Circ. 81, p. 1.
Coccothraustes vespertina, see Hesperiphona vespertina.
Coccyzus americanus—Yellow-billed cuckoo.
Beneficial, Ybk. 1897, p. 670; Ybk. 1904, p. 514.

Coccyzus americanus—Continued.
Brief account, Bul. 1, p. 123; Bul. 38, p. 45; F. Bul. 54, pp. 5–6 (21 stomachs); F. Bul. 54 (rev.), pp. 7–8 (109 stomachs); Ybk. 1900, p. 297.
Feeding on caterpillars, Rept. 1889, p. 369; Rept. 1898, pp. 39–40; cotton worm, Bul. 25, pp. 19–20; mulberries, Rept. 1890, p. 285; potato beetle, Bul. 32, p. 47; Rept. 1889, p. 369; rose beetle, Bul. 32, p. 20; tussock moth, Bul. 1, pp. 108–109, 292, 324; Rept. 1886, p. 244; webworms, Bul. 1, p. 123.
Food at Marshall Hall, Bul. 17, pp. 24, 29, 30, **87**.
Formal report, Bul. 9, pp. 7–14 (109 stomachs).
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, p. 297.
Coccyzus erythropthalmus—Black-billed cuckoo.
Beneficial, Bul. 38, p. 45; Ybk. 1897, p. 670.
Brief account, F. Bul. 54, pp. 5–6 (16 stomachs); F. Bul. 54 (rev.), pp. 7–8 (46 stomachs); Ybk. 1900, pp. 297, 428.
Feeding on caterpillars, Rept. 1898, pp. 39–40; tussock moth, Bul. 1, pp. 108, 109; Rept. 1886, p. 244.
Food at Marshall Hall, Bul. 17, pp. 24, **87**.
Food of nestlings, Ybk. 1900, p. 428.
Formal report, Bul. 9, pp. 7–14 (46 stomachs).
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, p. 297.
Colaptes auratus—Flicker.
Beneficial, Ybk. 1897, p. **670**; Ybk. 1904, p. 514.
Brief account, Bul. 12, p. 18; Bul. 12 (rev.), p. 25; Bul. 34, p. 25; Bul. 38, pp. 48–49; F. Bul. 54, pp. **7–8**, 10; F. Bul. 54 (rev.), pp. **10–11**, 13; Ybk. 1900, p. 294.
Damage to buildings, Bul. 39, pp. 13–14; poles, Bul. 39, p. 11; posts, Bul. 39, p. 13.
Distributing poison Rhus seeds, Rept. 1890, p. 283.
Feeding on ants, Fauna 27, p. 388.
Food at Marshall Hall, Bul. 17, pp. 19, 34, 38, 62, **90–91**.
Food of nestlings, Ybk. 1900, p. 427.
Formal report, Bul. 7, pp. 8, 9, 10, 11, **16–20**, 25, 38 (230 stomachs); Bul. 37, pp. 10, 12, **52–58**, 59, 60, 61 (684 stomachs).
Relation to orchards, Ybk. 1900, p. 294.
Colaptes cafer collaris—Red-shafted flicker.
Brief account, F. Bul. 54, pp. 7–8; F. Bul. 54 (rev.), pp. 10–11.
Damage to buildings, Bul. 39, pp. 13–14; Fauna 7, p. 51; poles, Bul. 39, p. 11; posts, Bul. 39, pp. 13–14.
Feeding on juniper berries (probably), Fauna 16, p. 116.
Food in California, Bul. 34, pp. 25–28 (118 stomachs).
Formal report, Bul. 37, pp. 10, **59–62** (183 stomachs).
Colaptes chrysoides—Gilded flicker.
Brief account, Bul. 37, pp. 63, **64**.
Colinus ridgwayi—Masked bobwhite.
Brief account, Bul. 21, pp. 46–47.
Colinus virginianus—Bobwhite.
Brief account, Bul. 38, pp. 9, 34; F. Bul. 54 (rev.), pp. 5–6; Ybk. 1900, p. 432; Ybk. 1909, p. 252.
Economic value, Bul. 38, p. 9; Rept. 1904, p. 294; Ybk. 1902, p. 206; Ybk. 1907, pp. 172, 594.
Feeding on boll weevil, Bul. 22, pp. 11–12, 16; Bul. 25, pp. 8, 13, 21; Bul. 29, pp. 6, 21, 30; Circ. 64, p. 5; garden pests, Circ. 81, p. 8; grain, Rept. 1898, p. 39; poison Rhus seeds, Rept. 1890, p. 283; potato beetle, Bul. 32, p. 47; seeds, Bul. 22, pp. 12, 13; weed seeds, Bul. 15, p. 37; Ybk. 1898, pp. 222, 231–232.
Food at Marshall Hall, Bul. 17, pp. 13, 22, 25, 26, 28, 32, 38, 40, 60, 62, 69–70, 71, **78**, **83–85**, 110, 111 (13 stomachs).
Food of nestlings, Ybk. 1900, p. 432.
Formal report, Bul. 21, pp. 9–46 (918 stomachs); Ybk. 1903, pp. 193–204 (801 stomachs).
Natural and valuable cultivated foods, Ybk. 1909, p. 194.
Columba fasciata—Band-tailed pigeon.
Feeding on acorns and berries of *Arbutus menziesii*, Fauna 7, p. 31.
Columba flavirostris madrensis—Tres Marias pigeon.
Feeding on figs and guavas, Fauna 14, p. 35.
Columba livia—Common pigeon.
Feeding on army worms, Bul. 1, pp. 290–291.
Columba palumbus—Wood pigeon.
Injurious in England, Bul. 1, p. 335.
Colymbus auritus—Horned grebe.
Food at Marshall Hall, Bul. 17, p. 79.
Compsothlypis americana—Parula warbler.
Brief account, Bul. 38, p. 77.
Food at Marshall Hall, Bul. 17, pp. 23, 24, 103–104.
Condor, California, see Gymnogyps californianus.
Contopus richardsoni, see Myiochanes richardsoni.
Contopus virens, see Myiochanes virens.

Conuropsis carolinensis—Carolina paroquet.
Brief account, Bul. 38, p. 44.
Coot, see Fulica americana.
Cormorant, Double-crested, see Phalacrocorax auritus.
Cormorant, Red-faced, see Phalacrocorax urile.
Corvus americanus, see Corvus brachyrhynchos.
Corvus brachyrhynchos—American crow.
Bounty laws, Ybk. 1896, pp. 55, 57, 58, 59, 61; Ybk. 1899, pp. 279, 280, 281, 282.
Brief account, Bul. 31, pp. 50–51; Bul. 38, p. 56; F. Bul. 54, pp. 3, **15–17**; F. Bul. 54 (rev.), pp. 3, **22–23**, 25; Ybk. 1897, pp. 345, 346–348; Ybk. 1900, p. 424; Ybk. 1907, pp. 170, 175, 177, 178.
Damage to grain, Bul. 12, pp. 36, 37; Bul. 12 (rev.), p. 43; Rept. 1898, p. 39; Ybk. 1897, pp. 345, 346–348.
Distributing poison Rhus, Rept. 1889, p. 368; and other seeds, Rept. 1890, pp. 282–284.
Equally beneficial and injurious, Bul. 12, p. 49; Bul. 12 (rev.), p. 58.
Feeding on corn, Bul. 3, p. 9; Bul. 32, p. 91; Rept. 1886, p. 242; cutworms, Bul. 3, p. 9; eggs and young of bobwhite, Bul. 21, p. 22; of ruffed grouse, Bul. 24, p. 28; of shorebirds, Circ. 79, p. 2; field mice, Bul. 31, pp. 50–51; Ybk. 1905, p. 371; (*Microtus montanus*) F. Bul. 335, p. 12; F. Bul. 352, p. 21; Ybk. 1908, p. 309; figs, Fauna 7, p. 72; insects, Ybk. 1908. p. 347; poison Rhus seeds, Bul. 24, p. 36; poisoned wheat, F. Bul. 352, p. 8; potato beetle, Bul. 32, p. 47.
Food at Marshall Hall, Bul. 17, pp. 13–14, 23, 24, 28, 30, 32, 34, 35, 37, 38, 43, 47–48, **50**, 53, 54, 55, 56, **57–58**, 59, 60, 61, 62, **63–64, 65–66**, 68, 84, 94, 110.
Food of nestlings, Ybk. 1900, pp. 424–425, 436.
Formal report, Bul. 6, pp. 1–98 (909 stomachs); Rept. 1888, pp. 498–534 (86 stomachs).
Injurious, hence unprotected in certain States, Bul. 12, pp. 36, 37; Bul. 12 (rev.), p. 43; Bul. 38, p. 10.
Other notes, Rept. 1890, p. 279.
Predatory, F. Bul. 390, p. 23.
Reference to studies of food, Ybk. 1899, pp. 265, 266.
Request for information on economic relations, Ent. Circ. 20 [p. 1]; Circ. 1 [p. 2]; Rept. 1886, p. 230.
Scalps paid in lieu of taxes, Ybk. 1896, p. 67.
Corvus caurinus—Northwestern crow.
Feeding on field mice, Bul. 31, p. 50; pheasant eggs, Rept. 1888, p. 485.
Corvus corax corax—Old-world raven.
Feeding on lemmings and voles, Bul. 31, p. 50.
Corvus corax principalis—Northern raven.
Feeding on carrion, Fauna 24, p. 71; Fauna 30, pp. 40, 62, 90; crabs, Fauna 21, p. 47.
Corvus corax sinuatus—Southern raven.
Feeding on carrion, Fauna 7, p. 71; field mice, Bul. 31, p. 50; (*Microtus montanus*) F. Bul. 335, p. 12; F. Bul. 352, p. 21; Rept. 1908, p. 573; Ybk. 1908, p. 309; grasshoppers, Fauna 7, pp. 38, 71.
Corvus corone—Carrion crow.
Feeding on eggs and young of *Perdix perdix*, Bul. 6, p. 41; lemmings and voles, Bul. 31, p. 50.
Corvus cryptoleucus—White-necked raven.
Feeding on field mice, Bul. 31, p. 50; pocket gophers (probably), Bul. 6, p. 35.
Corvus frugilegus—Rook.
Feeding on lemmings and voles, Bul. 31, p. 50.
Corvus ossifragus—Fish crow.
Brief account, Rept. 1888, pp. 498, 500, 515, 525, **534–535** (12 stomachs).
Feeding on cultivated fruit, Bul. 6, p. 82; field mice, Bul. 31, p. 50; sumach seeds, Rept. 1890, pp. 283–284.
Food at Marshall Hall, Bul. 17, pp. 14, 63.
Coturniculus savannarum passerinus, see Ammodramus savannarum australis.
Cowbird, see Molothrus ater.
Crane, Little brown, see Grus canadensis.
Sandhill, see Grus mexicana.
Whooping, see Grus americana.
Creeper, Black-and-white, see Mniotilta varia.
Brown, see Certhia familiaris americana.
California, see Certhia familiaris occidentalis.
Tree, see Certhia familiaris familiaris.
Crossbill, see Loxia curvirostra minor.
White-winged, see Loxia leucoptera.
Crow, American, see Corvus brachyrhynchos.
Carrion, see Corvus corone.
Clarke's, see Nucifraga columbiana.
Fish, see Corvus ossifragus.
Northwestern, see Corvus caurinus.
Cryptoglaux acadica—Saw-whet owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on field mice, Bul. 31, p. 50; Ybk. 1905, p. 371.
Formal report, Bul. 3, pp. 11, **160–162** (22 stomachs); Rept. 1887, p. 419 (6 stomachs).

Cryptoglaux funerea richardsoni—Richardson's owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **159.**
Feeding on field mice (*Microtus drummondi*), red-back mice (*Evotomys gapperi athabascæ*), and white-footed mice (*Peromyscus arcticus*), Fauna 27, p. 370.
Cuckoo, Black-billed, see Coccyzus erythropthalmus.
Yellow-billed, see Coccyzus americanus.
Curlew, Hudsonian, see Numenius hudsonicus.
Long-billed, see Numenius americanus.
Cyanistes cæruleus—Blue titmouse.
Admission denied, Ybk. 1905, p. 545.
Economic status in view of proposed introduction, Rept. 1899, p. 67.
Feeding on scale insects, Ybk. 1906, pp. 191, 192.
Cyanocephalus cyanocephalus—Piñon jay.
Feeding on piñon nuts, Fauna 3, pp. 39, 94; (*Pinus monophylla*) Fauna 7, pp. 73, 337.
Cyanocitta cristata—Blue jay.
Brief account, Bul. 38, p. 55; F. Bul. 54, pp. 14–15 (292 stomachs); F. Bul. 54 (rev.), pp. 18–19 (300 stomachs); Ybk. 1907, pp. 171–172.
Feeding on boll weevil, Circ. 64, p. 5; brown-tail moth, Ybk. 1907, pp. 171–172; eggs and young of smaller birds, Rept. 1888, p. 514; English sparrow, Bul. 1, pp. 31, 32, 233, 234; mahaleb cherry, Bul. 32, p. 65; scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 29, 32, 35, 38, 40, 60, **93–94** (6 stomachs).
Formal report, Ybk. 1896, pp. 197–206 (292 stomachs).
Predatory, Bul. 1, p. 268; Bul. 34, p. 47.
Reference to studies of food habits, Ybk. 1899, p. 265.
Cyanocitta stelleri—Steller's jay.
Brief account, F. Bul. 54 (rev.), pp. 19–20.
Feeding on piñon nuts, Fauna 3, pp. 39, 94.
Food in California, Bul 34, pp. 8, **47–49** (93 stomachs).
Cyanospiza ciris, see Passerina ciris.
Cyanospiza cyanea, see Passerina cyanea.
Cyclorrhynchus psittaculus, see Phaleris psittacula.
Cyrtonyx montezumæ mearnsi—Mearns's quail.
Formal report, **Bul. 21, pp. 63–64 (9 stomachs).**

D.

Dafila acuta—Pintail.
Brief account, Bul. 38, p. 20.
Feeding on *Lymnæa palustris,* Fauna 27, p. 283.
Vegetable food, Circ. 81, p. 1.
Dendragapus obscurus—Dusky grouse.
Feeding on ants, Fauna 16, p. 110; bearberries (*Arctostaphylos uva-ursi*), Fauna 5, p. 93; Fauna 27, p. 337; currants (*Ribes cereum*), grasshoppers and other insects, leaves of willow, Fauna 5, p. 93; (*Salix myrtillifolia*) Fauna 27, p. 337; manzanita berries (*Arctostaphylos nevadensis*), Fauna 16, p. 110; mountain cranberries (*Vitis-idæa vitis-idæa*), Fauna 27, p. 337; seeds of *Pentstemon gracilentus,* Fauna 16, p. 110.
Formal report, Bul. 24, pp. 41–44 (45 stomachs).
Dendroica æstiva—Yellow warbler.
Brief account, Bul. 38, p. 77.
Feeding on boll weevil, Bul. 29, pp. **6, 21, 25, 30**; Circ. 64, p. 5; mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 194.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 25, 30, 33, 34, 35, 39, 40, 103–104 (7 stomachs).
Food in California, Bul. 30, pp. 47–49 (98 stomachs).
Dendroica auduboni—Audubon's warbler.
Feeding on insects (in cabbage), Fauna **7**, p. 119; (noxious) Ybk. 1904, p. 254; scale insects, Ybk. 1906, pp. 194, 195.
Food in California, Bul. 30, pp. 43–46 (383 stomachs).
Dendroica cærulescens—Black-throated blue warbler.
Food at Marshall Hall, Bul. 17, p. 20.
Dendroica castanea—Bay-breasted warbler.
Feeding on mulberries, Rept. 1890, p. 285.
Dendroica coronata—Myrtle warbler.
Brief account, Bul. 38, p. 78.
Distributing poison Rhus seeds, Rept. 1890, p. 283.
Feeding on boll weevil, Circ. 64, p. 5; scale insects, Ybk. 1906, pp. 194, 195; seeds, Rept. 1890, p. 282.
Food at Marshall Hall, Bul. 17, pp. 20, 62, 103–104.
Food in California, Bul. 30, p. 46 (10 stomachs).
Dendroica discolor—Prairie warbler.
Food at Marshall Hall, Bul. 17, pp. 20, 34, 103–104.
Dendroica maculosa, see Dendroica magnolia.
Dendroica magnolia—Magnolia warbler.
Feeding on scale insects, Ybk. 1906, p. **195.**

Dendroica magnolia—Continued.
Food at Marshall Hall, Bul. 17, pp. 20, 29, 34, 35, 40, 103–104.
Dendroica palmarum—Palm warbler.
Number of insects eaten per minute, Bul. 17, p. 104.
Dendroica striata—Black-poll warbler.
Feeding on scale insects, Ybk. 1906, p. 195.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 29, 34, 35, 39, 40, 103–104 (11 stomachs).
Dendroica tigrina—Cape May warbler.
Feeding on mulberries, Rept. 1890, p. 285.
Dendroica townsendi—Townsend's warbler.
Feeding on scale insects, Ybk. 1906, p. 197.
Food in California, Bul. 30, pp. 46–47 (31 stomachs).
Dendroica vigorsi—Pine warbler.
Brief account, Bul. 38, p. 80.
Food at Marshall Hall, Bul 17, p. 20.
Dendroica virens—Black-throated green warbler.
Food at Marshall Hall, Bul. 17, p. 20.
Dickcissel, see Spiza americana.
Dolichonyx oryzivorus—Bobolink.
Bounty laws, Ybk. 1896, p. 57; Ybk. 1899, p. 279.
Brief account, Bul. 38, pp. 56–57; F. Bul. 54, pp. 4, **17–19**; F. Bul. 54 (rev.), pp. 4, **23–24**; Rept. 1886, pp. 246–250; Ybk. 1907, p. 171.
Damage to grain, Bul. 1, p. 70; Bul. 12, pp. 35, 36; Bul. 12 (rev.), p. 42; Bul. 32, p. 80; Rept. 1887, pp. 428, 431; Ybk. 1898, pp. 230, 232; rice, Bul. 1, p. 76; Bul. 3, p. 9; Bul. 12, p. 18; Bul. 12 (rev.), pp. 25–26; Bul. 15, p. 17; Bul. 30, p. 12; Ent. Circ. 20 [p. 2]; Circ. 1 [p. 2]; Circ. 5 [p. 1]; Rept. 1886, pp. 229, 234, 235, 246–250; Rept. 1900, p. 44; Ybk. 1903, p. 375; Ybk. 1904, pp. 245, 253.
Feeding on weed seeds, Ybk. 1898, pp. 230, 232; wild rice, Bul. 1, p. 76; Bul. 3, p. 9; Bul. 12, p. 18.
Food at Marshall Hall, Bul. 17, pp. 24, 30, 34, 35, 40, 71, **95** (6 stomachs).
Formal report, Bul. 13, pp. 8, 9, 11, **12–22** (291 stomachs).
Injurious, hence exempt from protection in certain States, Bul. 12, p. 36; Bul. 12 (rev.), p. 43.
Insectivorous, Bul. 12, pp. 14, 24; Bul. 12 (rev.), pp. 22, 31.
Other notes, Rept. 1887, pp. 400–401; Rept. 1890, p. 279; Ybk. 1904, pp. 245, 253.
Request for information on economic relations, Ent. Circ. 20 [p. 2]; Circ. 1 [p. 2]; Cir. 5 [p. 1]; Rept. 1886, pp. 230, 234.
Dove, Ground, see Chæmepelia passerina terrestris.
Mourning, see Zenaidura macroura carolinensis.
Ring, see Columba palumbus.
Rock, see Columba livia.
Dowitcher, see Macrorhamphus griseus.
Dryobates arizonæ—Arizona woodpecker.
Relation to orchards, Ybk. 1900, p. 295.
Dryobates borealis—Red-cockaded woodpecker.
Feeding on scale insects, Ybk. 1906, p. 197.
Formal report, Bul. 37, pp. 10, 22–23 (76 stomachs).
Relation to orchards, Ybk. 1900, p. 295.
Dryobates nuttalli—Nuttall's woodpecker.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 34, pp. 19–21 (46 stomachs).
Formal report, Bul. 37, pp. 10, 23–25 (53 stomachs).
Relation to orchards, Ybk. 1900, p. 295.
Dryobates pubescens—Downy woodpecker.
Beneficial, Ybk. 1897, p. 670.
Brief account, Bul. 34, p. 17; Bul. 38, p. 46; F. Bul. 54, pp. **6–7**, 9; F. Bul. 54 (rev.), pp. **9–10**, 13; Ybk. 1900, pp. 292–293, 295, 427.
Damage to posts, Bul. 39, p. 13.
Distributing poison Rhus seeds, Rept. 1890, p. 283.
Feeding on mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, pp. 194, 197.
Food at Marshall Hall, Bul. 17, pp. 19, 24, 33, 34, 35, 38, 40, **47**, 59, 60, 61, 62, 76, **88** (13 stomachs).
Food in California, Bul. 34, pp. **17–19**, 20 (80 stomachs).
Food of nestlings, Ybk. 1900, p. 427.
Formal report, Bul. 7, pp. 8, 9, 10, **11–14**, 15, 16, 18, 38 (140 stomachs); Bul. 37, pp. 10, 11, 12, **17–22**, 24 (723 stomachs).
Relation to orchards, Ybk. 1900, pp. 292–293, 295.
Tapping trees, Bul. 39, pp. 92–95.
Dryobates scalaris bairdi—Texas woodpecker.
Brief account, Bul. 37, p. 63.
Damage to poles, Bul. 39, pp. 10, 11; posts, Bul. 39, p. 13.
Relation to orchards, Ybk. 1900, p. 295.
Dryobates scalaris graysoni — Grayson's woodpecker.
Feeding habits, Fauna 14, p. 43.
Dryobates scalaris lucasanus—San Lucas woodpecker.
Damage to poles, Bul. 39, p. 11.
Relation to orchards, Ybk. 1900, p. 295.
Dryobates villosus—Hairy woodpecker.
Beneficial, Bul. 38, p. 46; Ybk. 1897, p. 670.

Dryobates villosus—Continued.
Brief account, Bul. 34, p. 16; F. Bul. 54, pp. **6–7,** 9; F. Bul. 54 (rev.), pp. **9–10,** 13; Ybk. 1900, pp. 292, 293–294.
Damage to posts, Bul. 39, p. 13.
Distributing poison Rhus seeds, Rept. 1890, p. 283.
Feeding on scale insects, Ybk. 1906, p. 197.
Food in California, Bul. 34, pp. **15–17,** 20, 22 (27 stomachs).
Formal report, Bul. 7, pp. 8, 9, **10, 11, 14–16,** 18, 38 (82 stomachs); Bul. 37, pp. 10, 11, 12, **13–17** (382 stomachs).
Relation to orchards, Ybk. 1900, pp. 292, 293–294.
Tapping trees, Bul. 39, pp. 92–95.
Duck, Black, see Anas rubripes.
Greater scaup, see Marila marila.
Lesser scaup, see Marila affinis.
Mallard, see Anas platyrhynchos.
Pintail, see Dafila acuta.
Ring-necked, see Marila collaris.
Ruddy, see Erismatura jamaicensis.
Spoonbill, see Spatula clypeata.
Wood, see Aix sponsa.
Dumetella carolinensis—Catbird.
Beneficial, Bul. 38, p. 9.
Brief account, Bul. 38, p. 85; F. Bul. 54, pp. 33–34; F. Bul. 54 (rev.), pp. 39–40 (213 stomachs); Ybk. 1900, pp. 303–304, 416.
Feeding on fruit, Rept. 1890, p. 281; Ybk. 1907, p. 169; mahaleb cherries (*Prunus mahaleb*), Bul. 32, p. 65; mulberries, Bul. 32, pp. 64, 65; Rept. 1890, p. 285.
Food at Marshall Hall, Bul. 17, pp. 17–18, 21, 23, 24, 25, 26, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 43, 47, 55–56, 57, 58, 59, 60, 61, 62, **104–105** (74 stomachs).
Food of nestlings, Ybk. 1900, pp. 416, 436.
Formal report, Ybk. 1895, pp. 405, **406–411,** 414, 418 (213 stomachs).
Other notes, Bul. 1, pp. 126, 304; Bul. 15, p. 29.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, pp. 303–304.
Request for information on economic relations, Ent. Circ. 20 [p. 2].

E.

Eagle, Bald, see Haliæetus leucocephalus.
Golden, see Aquila chrysaëtos.
Gray sea, see Haliæetus albicilla.
Ectopistes migratorius—Passenger pigeon.
Damage to grain, Fauna 27, p. 351.
Food of adults and nestlings, Ybk. **1900, p. 431.**
Egret, see Herodias egretta.
Snowy, see Egretta candidissima.
Egretta candidissima—Snowy egret.
Brief account, Ybk. 1900, p. 435.
Feeding on field mice, Bul. 31, p. 52.
Elainoides forficatus—Swallow-tailed kite.
Beneficial, Bul. 31, p. 45; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 38, p. 37; Circ. 61, pp. 3, 4; Ybk. 1894, pp. 217, 218.
Formal report, Bul. 3, pp. 11, **20–22,** 23, 24 (6 stomachs); Rept. 1887, p. 403 (5 stomachs).
Elanus leucurus—White-tailed kite.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **23;** Circ. 61, pp. 3, 4; Ybk. 1894, pp. 217, 218.
Feeding on lizards and snakes, Bul. 2, p. 113.
Emberiza citrinella—Old-world yellow-hammer.
Injurious in New Zealand, Ybk. 1909, p. 257.
Empidonax difficilis—Western yellow-bellied flycatcher.
Food in California, Bul. 34, pp. 41–44 (141 stomachs).
Empidonax minimus—Least flycatcher.
Feeding on boll weevil, Bul. 25, pp. 8, 13, 17, 19, 20, 21; Bul. 29, pp. 6, 14–15, 24, 30; Circ. 64, p. 5; mulberries, Bul. 32, p. 64; Rept. 1890, p. 285.
Empidonax trailli—Traill's flycatcher.
Brief account, Bul. 34, p. 44.
Feeding on boll weevil, Bul. 29, pp. 6, 15, 24, 30; Circ. 64, p. 5.
Empidonax virescens—Acadian flycatcher.
Brief account, Bul. 38, p. 54.
Feeding on rose beetle, Bul. 32, p. 20.
Food at Marshall Hall, Bul. 17, pp. 36, **92.**
Ereunetes pusillus—Peep.
Feeding on mosquitoes, Circ. 79, p. 2.
Erismatura jamaicensis—Ruddy duck.
Vegetable food, Circ. 81, p. 1.
Euphagus carolinus—Rusty blackbird.
Brief account, Bul. 38, p. 59; Ybk. 1897, pp. 351–352.
Damage to grain, Rept. 1887, p. 428; Ybk. 1897, pp. 351–352; Ybk. 1898, p. 230.
Feeding on boll weevil, Circ. 64, pp. 3, 5; weed seeds, Ybk. 1898, p. 230.
Food at Marshall Hall, Bul. 17, pp. **14, 35, 38, 39, 71, 77, 96.**
Formal report, Bul. 13, pp. 9, **45–49** (132 stomachs).
Euphagus cyanocephalus—Brewer's blackbird.
Brief account, Ybk. 1897, pp. 351–352.
Damage to fruit, Bul. 30, p. 13; Ybk. 1904, pp. 246, 248; grain, Bul. 23,

Euphagus cyanocephalus—Continued.
p. 15; Bul. 29, p. 8; Fauna 27, p. 412; Rept. 1887, p. 430; Ybk. 1897, pp. 351–352; Ybk. 1898, p. 230.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 10, 11–12, 21; Bul. 29, pp. 6, 7, 8, 11, 17, 27, 28, 30; Circ. 64, pp. 3, 5; cankerworms, Ybk. 1908, p. 345; corn, Bul. 29, p. 8; crumbs in streets and dooryards, Fauna 5, p. 101; grasshoppers, Fauna 7, p. 78; weed seeds, Ybk. 1898, p. 230; wheat, Bul. 23, p. 15.
Food in California, Bul. 34, pp. 59–65 (312 stomachs).
Formal report, Bul. 13, pp. 9, 10, 11, 50–52 (146 stomachs).
Relation to fruit in California, Bul. 30, p. 13; Ybk. 1904, pp. 246, 248.
Euxenura maguari—Maguari stork.
Feeding on mice, Bul. 31, pp. 52–53.

F.

Falco columbarius—Pigeon hawk.
Brief account, Bul. 31, p. 45; Bul. 38, p. 40; Circ. 61, pp. 3, 13, 14; Ybk. 1894, pp. 217, 227, 228.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on crossbills, Fauna 21, p. 76; English sparrow, Bul. 1, pp. 32, 309; field mice, Bul. 31, p. 45; Fauna 19, p. 75; Ybk. 1905, p. 371; red-backed mouse, Fauna 19, p. 75; ruby-crowned kinglet, Fauna 30, p. 38; sparrow, Fauna 27, p. 363; tree sparrow, Fauna 27, p. 364.
Formal report, Bul. 3, pp. 15, **109–113, 114,** 115 (60 stomachs); Rept. 1887, pp. 402, 414 (19 stomachs).
Injurious, Bul. 12, p. 30; Bul. 12 (rev.), p. 33.
Falco fusco-cærulescens—Aplomado falcon.
Brief account, Bul. 3, pp. 15, **114–115**; Circ. 61, pp. 3, 13, 14; Ybk. 1894, pp. 217, 227, 228.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Falco islandus—White gyrfalcon.
Brief account, Bul. 3, pp. 15, 16, **102**; Circ. 61, pp. 3, 16; Ybk. 1894, pp. 218, 230.
Injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Falco mexicanus—Prairie falcon.
Brief account, Bul. 31, p. 45; Circ. 61, pp. 3, 13, **14–15**; Rept. 1887, p. 414; Ybk. 1894, pp. 217, 227, **228–229**.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on chicken (chasing), Fauna 5, p. 95; doves (chasing), Fauna 7, p. 40; ducks, Gambel's quail (watching), Fauna 7, p. 39; horned larks, Bul. 23, p. 12; Fauna 5, p. 95; jack rabbits, Bul. 8, p. 44; spermophiles, Bul. 4, pp. 16–17.
Formal report, Bul. 3, pp. **15, 104–106** (11 stomachs).
Falco peregrinus—Duck hawk.
Brief account, Bul. 31, p. 44; Bul. 38, pp. 10, 40; Circ. 61, pp. 3, **16–17**; Ybk. 1894, pp. 218, **230–231.**
Feeding on Alaska jays, intermediate sparrows, Fauna 19, p. 75; mallard (chasing), Fauna 27, p. 362; marsh hawks, Fauna 19, p. 75; scaup duck (chasing), Fauna 30, p. 88; sparrow hawk (chasing), Fauna 14, p. 38; varied thrushes, Fauna 19, p. 75; white-winged crossbills, Fauna 19, pp. 75, 82.
Formal report, Bul. 3, pp. 15, 16, **106–109,** 184 (20 stomachs); Rept. 1887, pp. 402, **414** (5 stomachs).
Injurious, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Bul. 38, p. 10; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670; Ybk. 1908, p. 192.
Falco richardsoni, see Falco columbarius.
Falco rusticolus—Gray gyrfalcon.
Brief account, Bul. 3, pp. 15, 16, **102–103**; Circ. 61, pp. 3, 16; Ybk. 1894, pp. 218, 230.
Feeding on bird, Fauna 19, p. 74; ptarmigan (apparently chasing), Fauna 27, p. 361.
Injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Falco sparverius—Sparrow hawk.
Beneficial, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Bul. 31, p. 45; Bul. 38, p. 41; Circ. 61, pp. 3, **9–10**; Ybk. 1894, pp. 217, **223**; Ybk. 1900, p. 430.
Feeding on cotton rat (*Sigmodon hispidus texianus*), Fauna 25, p. 116; English sparrow, Bul. 1, pp. 32, 150, 234, 309; Rept. 1886, p. 245; field mice, Bul. 31, p. 45; Ybk. 1905, p. 371; (*Microtus drummondi*) Fauna 27, p. 365; grasshoppers, Bul. 12, p. 30; Bul. 12 (rev.), p. 33; Fauna 3, p. 39; Fauna 5, p. 95; Fauna 7, p. 41; Fauna 16, p. 113; Ybk. 1907, p. 166; insects, Fauna 3, p. 91; red-backed mouse (*Evotomys dawsoni*), Fauna 27, p. 365; snake, Fauna 7, p. 41.
Food at Marshall Hall, Bul. 17, pp. 19, **86.**
Food of nestlings, Ybk. 1900, p. 430.

Falco sparverius—Continued.
Formal report, Bul. 3, pp. 11, 13, **115–127**, 192 (320 stomachs); Rept. 1887, pp. 414–417 (133 stomachs); Rept. 1888, pp. 491–496 (163 stomachs).
Other notes, Bul. 1, p. 150; Bul. 9, p. 16; Bul. 30, pp. 33–34; Rept. 1886, p. 245.
Falcon, Aplomado, see Falco fusco-cærulescens.
Prairie, see Falco mexicanus.
Finch, Gray-crowned rosy, see Leucosticte tephrocotis.
House, see Carpodacus mexicanus frontalis.
Purple, see Carpodacus purpureus.
Flicker, see Colaptes auratus.
Gilded, see Colaptes chrysoides.
Red-shafted, see Colaptes cafer collaris.
Florida cærulea—Little blue heron.
Brief account, Bul. 38, p. 26; Ybk 1900, p. 435.
Food at Marshall Hall, Bul. 17, pp. 19, 81.
Flycatcher, Acadian, see Empidonax virescens.
Ash-throated, see Myiarchus cinerascens.
Crested, see Myiarchus crinitus.
Least, see Empidonax minimus.
Olive-sided, see Nuttallornis borealis.
Scissor-tailed, see Muscivora forficata.
Traill's, see Empidonax trailli.
Western yellow-bellied, see Empidonax difficilis.
Foudia madagascariensis — Madagascar weaver bird.
Injurious wherever introduced, Rept. 1904, p. 296.
Fratercula corniculata—Horned puffin.
Food of nestlings, Ybk. 1900, p. 433.
Fringilla cœlebs—Chaffinch.
Feeding on caterpillars, corn, Bul. 1, p. 343; seeds, Bul. 1, p. 335.
Injurious in New Zealand, Ybk. 1909, p. 257.
Fulica americana—Coot.
Brief account, Bul. 38, pp. 18, 28–29.
Food at Marshall Hall, Bul. 17, pp. 81–82.

G.

Gadwell, see Chaulelasmus streperus.
Galeoscoptes carolinensis, see Dumetella carolinensis.
Gallinago delicata—Jacksnipe.
Feeding on click beetles, crane flies, crayfish, Circ. 79, p. 6; Dytiscidæ, Circ. 79, p. 8; grasshoppers, Circ. 79, p. 4; wireworms, Circ. 79, p. 6.
Garrulus glandarius—Old-world jay.
Food of nestlings, Ybk. 1900, p. 411.
Gavia arctica—Black-throated loon.
Food of nestlings, Ybk. 1900, p. 433.
Gavia stellata—Red-throated loon.
Feeding on fishes, Fauna 27, p. 259.
Geococcyx californianus—Road runner.
Feeding on field mice, Bul. 31, p. 51.
Geothlypis trichas—Yellowthroat.
Brief account, Bul. 38, p. 82.
Feeding on boll weevil, Circ. 64, p. 5; scale insects, Ybk. 1906, p. 194.
Food at Marshall Hall, Bul. 17, pp. 20, 22, 24, 28, 30, 32, 34, 35, 38, 39, 40, 103–104 (13 stomachs).
Food in California, Bul. 30, pp. 49–50 (114 stomachs).
Insectivorous, Ybk. 1908, p. 344.
Glaucidium gnoma—Pygmy owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on spermophiles, Bul. 4, p. 16.
Food of nestlings, Ybk. 1900, p. 431.
Formal report, Bul. 3, pp. 11, **196–198** (6 stomachs).
Glaucidium phalœnoides—Ferruginous pygmy owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **199**.
Glaux funerea richardsoni, see Cryptoglaux funerea richardsoni.
Gnatcatcher, Black-tailed, see Polioptila californica.
Blue-gray, see Polioptila cærulea.
Godwit, Hudsonian, see Limosa hæmastica.
Marbled, see Limosa fedoa.
Golden-eye, see Clangula clangula americana.
Goldfinch, see Astragalinus tristis.
Green-backed, see Astragalinus psaltria hesperophilus.
Goose, Canada, see Branta canadensis.
Snow, see Chen hyperboreus.
Goshawk, see Astur atricapillus.
Mexican, see Asturina plagiata.
Grackle, Purple, see Quiscalus quiscula.
Grebe, Horned, see Colymbus auritus.
Pied-billed, see Podilymbus podiceps.
Greenfinch, see Chloris chloris.
Grosbeak, Alaska pine, see Pinicola enucleator alascensis.
Black-headed, see Zamelodia melanocephala.
Blue, see Guiraca cærulea.
Evening, see Hesperiphona vespertina.
Gray, see Pyrrhuloxia sinuata.
Pine, see Pinicola enucleator leucura.
Rose-breasted, see Zamelodia ludoviciana.

Grouse, Dusky, see Dendragapus obscurus.
Franklin's, see Canachites franklini.
Ruffed, see Bonasa umbellus.
Sharp-tailed, see Pediœcetes phasianellus.
Spruce, see Canachites canadensis.
Wood, see Tetrao urogallus.

Grus americana—Whooping crane.
Feeding on field mice, Bul. 31, p. 53.

Grus canadensis—Little brown crane.
Feeding on barley, Fauna 7, pp. 20–21; field mice, Bul. 31, p. 53; foliage and rootlets, Fauna 7, pp. 20–21.

Grus mexicana—Sandhill crane.
Feeding on field mice, Bul. 31, p. 53.
Food of young in captivity, Ybk. 1900, p. 433.

Guiraca caerulea—Blue grosbeak.
Brief account, F. Bul. 456, pp. 11–12.
Feeding on weed seeds, Ybk. 1898, p. 230.
Formal report, Bul. 32, pp. **78–85**, 87, 91 (51 stomachs).

Guiraca ludoviciana, see Zamelodia ludoviciana.

Gull, California, see Larus californicus.
Franklin's, see Larus franklini.
Glaucous-winged, see Larus glaucescens.
Great black-backed, see Larus marinus.
Heermann's, see Larus heermanni.
Herring, see Larus argentatus.
Laughing, see Larus atricilla.
Ring-billed, see Larus delawarensis.
Short-billed, see Larus brachyrhynchus.

Gymnogyps californianus—California condor.
Feeding on carrion, Fauna 7, p. 33.

Gyrfalcon, Gray, see Falco rusticolus.
White, see Falco islandus.

H.

Habia ludoviciana, see Zamelodia ludoviciana.

Haliæetus albicilla—Gray sea eagle.
Compiled information, Bul. 27, pp. 18–20.

Haliæetus leucocephalus—Bald eagle.
Brief account, Bul. 38, p. 40; Circ. 61, pp. 3, 13, **14**; Ybk. 1894, pp. 217, **227–228**; Ybk. 1900, p. 430.
Compiled information, Bul. 27, pp. 6–17.
Equally beneficial and injurious, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on crustaceans and mollusks, Fauna 21, p. 43; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, p. 16.
Food at Marshall Hall, Bul. 17, pp. 19, **50**, 53.

Haliæetus leucocephalus—Continued.
Formal report, Bul. 3, pp. 15, **97–101** (21 stomachs); Rept. 1887, p. 413 (6 stomachs).
Protected in some States, Ybk. 1899, p. 266.

Harporhynchus lecontei, see Toxostoma lecontei.

Harporhynchus rufus, see Toxostoma rufum.

Hawk, Broad-winged, see Buteo platypterus.
Buzzard, see Buteo buteo.
Cooper's, see Accipiter cooperi.
Duck, see Falco peregrinus.
Ferruginous rough-legged, see Archibuteo ferrugineus.
Harris's, see Parabuteo unicinctus harrisi.
Marsh, see Circus hudsonius.
Mexican black, see Urubutinga anthracina.
Pigeon, see Falco columbarius.
Red-shouldered, see Buteo lineatus.
Red-tailed, see Buteo borealis.
Richardson's, see Falco columbarius.
Rough-legged, see Archibuteo lagopus sancti-johannis.
Rough-legged buzzard, see Archibuteo lagopus lagopus.
Sennett's white-tailed, see Buteo albicaudatus sennetti.
Sharp-shinned, see Accipiter velox.
Short-tailed, see Buteo brachyurus.
Sparrow, see Falco sparverius.
Squirrel, see Archibuteo ferrugineus.
Swainson's, see Buteo swainsoni.
Zone-tailed, see Buteo abbreviatus.

Heath hen, see Tympanuchus cupido.

Heleodytes brunneicapillus couesi—Cactus wren.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 64–65 (41 stomachs).

Helminthophila celata lutescens, see Vermivora celata lutescens.

Helmitheros vermivorus—Worm-eating warbler.
Brief account, Bul. 38, p. 75.
Feeding on scale insects, Ybk. 1906, p. 195.
Food at Marshall Hall, Bul. 17, pp. 34, 103–104.

Helodromas solitarius—Solitary sandpiper.
Feeding on grasshoppers, Circ. 79, p. 4.
Food at Marshall Hall, Bul. 17, p. 19.

Herodias egretta—Egret.
Feeding on field mice, Bul. 31, p. 52.

Heron, Black-crowned night, see Nycticorax nycticorax nævius.
Great blue, see Ardea herodias.
Green, see Butorides virescens.
Little blue, see Florida caerulea.

Hesperiphona vespertina—Evening grosbeak.
Brief account, Bul. 32, p. 5.
Feeding on cedar berries (*Juniperus occidentalis*), Fauna 16, pp. 123, 139; weed seeds, Ybk. 1898, p. 230.
Himantopus knudseni—Kukuluaeo.
Feeds on caterpillars and cutworms, protected in Hawaii, Bul. 12 (rev.), p. 87.
Himantopus mexicanus—Black-necked stilt.
Feeding on bill bugs, crayfishes, Circ. 79, p. 6; Dytiscidæ, Circ. 79, p. 8; grasshoppers, Circ. 79, p. 4.
Hirundo erythrogastra—Barn swallow.
Brief account, Bul. 38, p. 71; F. Bul. 54, p. 31; F. Bul. 54 (rev.), pp. 36–38; Ybk. 1900, p. 418.
Destroying nests and brood of English sparrows, Bul. 1, p. 282.
Feeding on bayberries, Rept. 1890, p. 282; boll weevil, Bul. 29, pp. 6, 13–14, 25, 30; Bul. 38, p. 71; Circ. 56, pp. 1–2; Circ. 57, p. 2; Circ. 64, p. 5.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 25, 26, 34, 35, 36, 40, 46, 98–99 (10 stomachs).
Food in California, Bul. 30, pp. 30–32 (82 stomachs).
Food of nestlings, Ybk. 1900, p. 418.
Protection urged, as enemy of boll weevil, Circ. 56, pp. 1–2; Circ. 57, p. 2.
Relation to bedbugs, Circ. 57, p. 2.
Hirundo rustica—Old-world Swallow.
Value as insect destroyer, Rept. 1886, p. 244.
Hirundo urbica, see Chelidonaria urbica.
Humming bird, Grayson's, see Amizilis graysoni.
Ruby-throated, see Archilochus colubris.
Hydrochelidon nigra surinamensis—Black tern.
Feeding on imago of cotton-boll worm, Ybk. 1908, p. 194.
Hylocichla aliciæ—Gray-checked thrush.
Brief account, Bul. 38, p. 91.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 29, 32, 34, 35, 38, **108.**
Hylocichla fuscescens—Veery.
Brief account, Bul. 38, p. 90.
Food at Marshall Hall, Bul. 17, p. 20.
Hylocichla guttata—Hermit thrush.
Beneficial, Ybk. 1907, p. 169.
Brief account, Bul. 38, p. 91.
Feeding on berries of *Celastrus scandens*, Bul. 1, p. 273; potato beetle, Bul. 32, p. 47.
Food at Marshall Hall, Bul. 17, p. 20.
Food in California, Bul. 30, pp. 92–93 (68 stomachs).
Hylocichla mustelina—Wood thrush.
Beneficial, Ybk. 1907, p. 169.
Brief account, Bul. 38, p. 90.
Hylocichla mustelina—Continued.
Feeding on mulberries, Rept. 1890, p. 285; potato beetle, Bul. 32, p. 47.
Food at Marshall Hall, Bul. 17, p. 20.
Hylocichla ustulata—Olive-backed thrush.
Feeding on potato beetle, Bul. 32, p. 47; spiders, Fauna 27, p. 493.
Food at Marshall Hall, Bul. 17, pp. 20, 29, 34, 38, 40, **108.**
Food in California, Bul. 30, pp. 13, **86–92** (157 stomachs).
Relation to fruit in California, Ybk. 1904, pp. 246, 251.

I.

Ibis, Wood, see Mycteria americana.
Icteria virens—Yellow-breasted chat.
Brief account, Bul. 38, p. 82.
Feeding on boll weevil, Bul. 29, pp. 6, 21, 25, 30; Circ. 64, p. 5.
Food at Marshall Hall, Bul. 17, pp. 18, 24, 29, 34, 35, 37, 38, 40, 103–104.
Icterus bullocki—Bullock's oriole.
Brief account, F. Bul. 54 (rev.), p. 29 (70 stomachs).
Feeding on boll weevil, Bul. 25, pp. 9, 10–11, 18, 20, 21; Bul. 29, pp. 6, 16, 25, 30; Circ. 64, p. 5; cherries, Bul. 34, p. 54; codling moth, Rept. 1904, p. 293; cotton worm, Bul. 25, p. 20; scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 34, pp. 54, **68–71** (162 stomachs).
Relation to fruit in California, Bul. 30, p. 13; Ybk. 1904, pp. 246, 251.
Icterus galbula—Baltimore oriole.
Beneficial, Ybk. 1897, p. 670.
Brief account, Bul. 38, p. 59; F. Bul. 54, pp. 23–24 (113 stomachs); F. Bul. 54 (rev.), p. 28 (202 stomachs); Ybk. 1900, p. 298.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 10–11, 18, 20, 21; Bul. 29, pp. 6, 16, 24, 25, 30; Bul. 38, p. 59; Circ. 64, p. 5; cherries, Bul. 1, p. 60; cotton worms, Bul. 25, p. 20; grapes, Bul. 1, p. 324; Ybk. 1904, p. 251; mulberries, Rept. 1890, p. 285; peas, Bul. 1, p. 60; scale insects, Ybk. 1906, p. 197; tent caterpillars, tussock moth caterpillars, Bul. 1, pp. 108, 324; Rept. 1886, p. 244.
Food at Marshall Hall, Bul. 17, pp. 28, 30, 40, 59, 60, **96.**
Food of nestlings, Ybk. 1900, p. 422.
Formal report, Ybk. 1895, pp. 419–420, **426–430** (113 stomachs).
Other notes, Bul. 34, pp. 68, 69.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, p. 298.

Icterus graysoni—Grayson's oriole.
Feeding on fig, Fauna 14, p. 61; fruit of Cereus, insects, spiders, weevils, Fauna 14, p. 51.

Icterus spurius—Orchard oriole.
Brief account, Bul. 38, p. 59.
Feeding on boll weevil, Bul. 25, pp. 9, 10–11, 16, 17, 18, 20, 21; Bul. 29, pp. 6, 16, 24, 25, 29, 30; Bul. 38, p. 59; Circ. 64, p. 5; cotton worms, Bul. 25, p. 20; mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 17, 24, 25, 30, 32, 34, 35, 40, **44–45**, 49, 55, 56, 59, 60, 61, **96**, 110 (11 stomachs).
Food of nestlings, Ybk. 1900, p. 422.
Request for information on economic relations, Ent. Circ. 20 [p. 2].

Ictinia mississippiensis—Mississippi kite.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 31, p. 45; Bul. 38, p. 37; Circ. 61, pp. 3, **4**; Rept. 1887, p. 403; Ybk. 1894, pp. 217, 218.
Formal report, Bul. 3, pp. 11, **24–25**.

Iridoprocne bicolor—Tree swallow.
Feeding on bayberries, Bul. 30, p. 27; Rept. 1890, p. 282.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 34, 35, 39, 40, 98–99 (5 stomachs).
Insectivorous, Bul. 1, p. 96.
Other notes, Bul. 30, p. 27; Circ. 56, pp. 1–2; F. Bul. 54, p. 31; F. Bul. 54 (rev.), pp. 36–38.

Ixobrychus exilis—Least bittern.
Feeding on field mice, Bul. 31, p. 52.
Food at Marshall Hall, Bul. 17, p. 19.

Ixoreus nævius—Varied thrush.
Feeding on scale insects, Ybk. 1906, pp. 197, 198.

J.

Jacksnipe, see Gallinago delicata.

Jaeger, Parasitic, see Stercorarius parasiticus.
Pomarine, see Stercorarius pomarinus.

Jay, Blue, see Cyanocitta cristata.
California, see Aphelocoma californica.
Canada, see Perisoreus canadensis.
Old-world, see Garrulus glandarius.
Piñon, see Cyanocephalus cyanocephalus.
Steller's, see Cyanocitta stelleri.
Woodhouse's, see Aphelocoma woodhousei.

Junco hyemalis—Snowbird.
Brief account, Bul. 38, p. 65.
Feeding on weed seeds, Bul. 9, p. 17; Ybk. 1898, pp. 222, 225, 226, 227.

Junco hyemalis—Continued.
Food at Marshall Hall, Bul. 17, pp. 16–17, 30, 34, 35, 38, 71, 73, 74, 75 (11 stomachs).
Food in California, Bul. 34, pp. **82–83**, 84 (269 stomachs).
Formal report, Bul. 15, pp. 18, 27, 28, 37, 38, 39, 41, 42, 43, 44, 45, 46, 80–82 (299 stomachs).
Other notes, F. Bul. 54, p. 28; F. Bul. 54 (rev.), p. 32.

K.

Kea, see Nestor notabilis.
Killdeer, see Oxyechus vociferus.
Kingbird, see Tyrannus tyrannus.
Arkansas, see Tyrannus verticalis.
Cassin's, see Tyrannus vociferans.
Kingfisher, Belted, see Ceryle alcyon.
Kinglet, Golden-crowned, see Regulus satrapa.
Ruby-crowned, see Regulus calendula.
Kite, Everglade, see Rostrhamus sociabilis.
Mississippi, see Ictinia mississippiensis.
Swallow-tailed, see Elainoides forficatus.
White-tailed, see Elanus leucurus.
Kittiwake, Pacific, see Rissa tridactyla pollicaris.
Knot, see Tringa canutus.
Kohlmeise, see Parus major.
Kukuluaeo, see Himantopus knudseni.

L.

Lagopus lagopus—Willow ptarmigan.
Feeding on aments of dwarf birch, Fauna 24, p. 66; Fauna 27, p. 342; bearberries (*Mairania alpina*), Fauna 27, p. 343; blueberries, Fauna 24, p. 66; (*Vaccinium uliginosum*) Fauna 27, p. 343; buds, Fauna 24, p. 66; of *Populus balsamifera*, buds and twigs of willows (*Salix bebbiana*), Fauna 27, p. 343; crowberries (*Empetrum nigrum*), Fauna 24, p. 66; Fauna 27, p. 343; foliage, Bul. 24, p. 66; of dwarf birch (*Betula nana*), Fauna 27, p. 343; of dwarf willow (*Salix reticulata*), Fauna 27, pp. 342, 343; of grass, Fauna 27, p. 343; of *Populus balsamifera*, Fauna 27, p. 342; of vetch (*Aragallus*), Fauna 27, pp. 342, 343; of wild rosemary (*Andromeda polifolia*), Fauna 27, p. 342; fruit of *Andromeda polifolia*, mountain cranberries (*Vitisidœa*), mushrooms, Fauna 27, p. 343; seeds of grass, Fauna 27, pp. 343, 344; of *Hedysarum americanum*, Fauna 27, p. 343.
Formal report, Bul. 24, pp. 44–46 (5 stomachs).

Lagopus leucurus—White-tailed ptarmigan.
Brief account, Bul. 24, pp. 47–48.

Lagopus rupestris—Rock ptarmigan.
Brief account, Bul. 24, pp. 46–47.
Feeding on aments of *Alnus viridis*, Fauna 24, p. 67; blueberries, Fauna 30, p. 37; buds of willow, Fauna 24, p. 67; Fauna 30, p. 87; buds and twigs of *Vaccinium*, Bul. 24, p. 67; crowberries, Fauna 30, p. 37; foliage of *Dryas*, Fauna 24, p. 67; Fauna 30, p. 37; of *Ledum*, Fauna 24, p. 67; fruit of *Cassiope*, Fauna 30, p. 37.

Lanius borealis—Big butcher bird.
Brief account, Ybk. 1900, pp. 301–302.
Feeding on bird (chasing), Fauna 5, p. 105; English sparrow, Bul. 1, pp. 31, 150, 233, 234, 238; Rept. 1886, p. 245; field mice, Bul. 31, pp. 51–52; meat and camp refuse, Fauna 30, p. 63; robin (chasing), Fauna 27, p. 459; spotted sandpiper (chasing), Fauna 30, pp. 36, 42.
Formal report, Bul. 9, pp. 15, 16, **17–20,** 24–25, 26 (67 stomachs).
Other notes, Bul. 1, pp. 150, 234; Rept. 1886, p. 245.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, pp. 301–302.

Lanius excubitor—European great butcher bird.
Brief account, Bul. 9, pp. 15, 19.

Lanius ludovicianus—Little butcher bird.
Brief account, Bul. 38, p. 73; Ybk. 1900, pp. 302, 416–417.
Feeding on beetles, Bell's vireo (*Vireo belli*), blue-gray gnatcatcher (*Polioptila caerulea*), Bul. 2, p. 233; boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 14–15, 21; Bul. 29, pp. 6, 22, 30; Circ. 64, p. 5; carrion, Bul. 2, p. 233; field mice, Bul. 31, p. 52; Ybk. 1905, p. 371; (*Microtus montanus*) F. Bul. 335, p. 12; F. Bul. 352, p. 21; grasshoppers, Bul. 2, p. 233; grasshopper mice (*Perognathus*), insects, lizards, Fauna 7, p. 114; western chipping sparrow (*Spizella passerina zonae*), Bul. 2, p. 233.
Food at Marshall Hall, Bul. 17, pp. 54, **100–102.**
Food in California, Bul. 30, pp. 33–38 (124 stomachs).
Food of nestlings, Ybk. 1900, pp. 416–417.
Formal report, Bul. 9, pp. 15, 16, 17, **20–24,** 25–26 (88 stomachs).
Other notes, Bul. 30, p. 35.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, p. 302.

Lanivireo flavifrons—Yellow-throated vireo.
Brief account, Bul. 38, p. 74.

Lanivireo solitarius cassini—Cassin's vireo.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 40–41 (46 stomachs).

Lark, Horned, see Otocoris alpestris.
Meadow, see Sturnella magna.
Shore, see Otocoris alpestris.
Western meadow, see Sturnella neglecta.

Larus argentatus—Herring gull.
Eating frozen moose meat, Fauna 30, p. 84.
Food at Marshall Hall, Bul. 17, pp. 53, 80.
Food of young in captivity, Ybk. 1900, p. 434.

Larus atricilla—Laughing gull.
Food of nestlings, Ybk. 1900, p. 434.

Larus brachyrhynchus—Short-billed gull.
Feeding on water beetles (*Dytiscus dauricus*), Fauna 27, p. 268.
Food of nestlings, Ybk. 1900, p. 434.

Larus californicus—California gull.
Feeding on duck [probably carrion], Fauna 7, p. 14; field mice, Ybk. 1908, p. 194.

Larus delawarensis—Ring-billed gull.
Feeding on field mice, Ybk. 1908, p. 194.
Food at Marshall Hall, Bul. 17, pp. 53, 80.

Larus franklini—Franklin's gull.
Feeding on crickets, Ybk. 1908, p. 194; grasshoppers, Rept. 1887, p. 431; Ybk. 1908, p. 194.
Food of nestlings, Ybk. 1900, p. 434.
Insectivorous, Rept. 1900, p. 37.

Larus glaucescens—Glaucous-winged gull.
Feeding on dead salmon, Fauna 24, p. 53.

Larus heermanni—Heermann's gull.
Feeding on fish they compelled gannets to disgorge, Fauna 14, p. 24.

Larus marinus—Great black-backed gull.
Feeding on field mice in Europe, Bul. 31, p. 53.

Leucosticte tephrocotis—Gray-crowned rosy finch.
Feeding on insects and seeds, Fauna 7, p. 82.

Ligurinus chloris, see Chloris chloris.

Limosa fedoa—Marbled godwit.
Feeding on grasshoppers, Circ. 79, p. 4.

Limosa hæmastica—Hudsonian godwit.
Feeding on horseflies, Circ. 79, p. 4.

Linaria cannabina—Old-world linnet.
Injurious in New Zealand, Ybk. 1909, p. 257.

Linnet, California, see Carpodacus mexicanus frontalis.
Old-world, see Linaria cannabina.

Lobipes lobatus—Northern phalarope.
Feeding on click beetles, clover-root curculio, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; Dytiscidæ, Circ. 79, p. 8; grasshoppers, Circ. 79, p. 4; mosquitoes, Circ. 79, p. 2; Rept. 1908, p. 577; *Nereis*, Circ. 79, p. 8; wireworms, Circ. 79, p. 6.
Longspur, Chestnut-collared, see Calcarius ornatus.
Lapland, see Calcarius lapponicus.
McCown's, see Rhynchophanes mccowni.
Smith's, see Calcarius pictus.
Loon, Black-throated, see Gavia arctica.
Red-throated, see Gavia stellata.
Lophodytes cucullatus—Hooded merganser.
Brief account, Bul. 38, p. 17.
Food at Marshall Hall, Bul. 17, pp. 53, 81.
Lophortyx californica—California quail.
Damage to fruit, Ybk. 1898, p. 231; grain, Ybk. 1897, p. 352.
Feeding on acorns, Fauna 7, p. 28; weed seeds, Ybk. 1898, p. 231.
Food in California, Bul. 34, pp. 9–14 (619 stomachs).
Formal report, Bul. 21, pp. 9, **47–56** (601 stomachs).
Killed by eating poisoned wheat, F. Bul. 352, p. 8.
Relation to fruit in California, Bul. 30, p. 13; Ybk. 1904, pp. 246, 250.
Lophortyx gambeli—Gambel's quail.
Damage to fruit, Ybk. 1898, p. 231.
Feeding on waste grain, Fauna 7, p. 29; weed seeds, Ybk. 1898, p. 231.
Formal report, Bul. 21, pp. 56–58 (28 stomachs).
Love bird, Tres Marias, see Psittacula insularis.
Feeding on seeds of pine and sunflower, Fauna 16, p. 123.
Loxia curvirostra minor—Crossbill.
Loxia leucoptera—White-winged crossbill.
Feeding on seeds of white spruce, Fauna 27, p. 417.
Lunda cirrhata—Tufted puffin.
Food of nestlings, Ybk. 1900, p. 433.

M.

Macrorhamphus griseus—Dowitcher.
Feeding on Dytiscidæ, Circ. 79, p. 8; grasshoppers, horseflies, Circ. 79, p. 4; *Nereis*, Circ. 79, p. 8.
Magpie, see Pica pica hudsonia.
Mallard, see Anas platyrhynchos.
Mareca americana—Widgeon.
Brief account, Bul. 38, p. 18.
Food at Marshall Hall, Bul. 17, p. 81.
Vegetable food, Circ. 81, pp. 1, 8.
Marila affinis—Little bluebill.
Food at Marshall Hall, Bul. 17, p. 81.
Vegetable food, Circ. 81, pp. 1, 8.
Marila americana—Redhead.
Brief account, Bul. 38, p. 21.
Vegetable food, Circ. 81, pp. 1, 8, 12.
Marila collaris—Ring-necked duck.
Brief account, Bul. 38, p. 21.
Marila marila—Big bluebill.
Feeding on *Lymnæa*, Fauna 27, p. 283.
Vegetable food, Circ. 81, pp. 1, 8.
Marila valisineria—Canvasback.
Brief account, Bul. 38, p. 21.
Food at Marshall Hall, Bul. 17, pp. 81, 82.
Vegetable food, Circ. 81, pp. 1, 7–8, 11–12.
Martin, Old-world, see Chelidonaria urbica.
Purple, see Progne subis.
Maryland yellowthroat, see Geothlypis trichas.
Meadowlark, see Sturnella magna.
Western, see Sturnella neglecta.
Megaquiscalus major—Boat-tailed blackbird.
Bounty laws, Ybk. 1896, p. 57.
Damage to corn, Bul. 29, p. 8; rice, Rept. 1886, pp. 246–247.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 10, 12, 21; Bul. 29, pp. 6, 7, 11, 17–18, 29, 30; Circ. 64, p. 5.
Formal report, Bul. 13, pp. 9, 10, **70–72** (116 stomachs).
Megascops asio, see Otus asio.
Megascops flammeola, see Otus flammeolus.
Melanerpes carolinus, see Centurus carolinus.
Melanerpes erythrocephalus — Red-headed woodpecker.
Brief account, Bul. 38, p. 48; F. Bul. 54, pp. 8–9, 10; F. Bul. 54 (rev.), pp. **11–12**, 13; Ybk. 1900, p. 295.
Damage to buildings, Bul. 39, p. 13; poles, Bul. 39, p. 10; posts, Bul. 39, p. 13.
Feeding on rose beetle, Bul. 32, p. 20; scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 19, 43, 60, 61, 90.
Formal report, Bul. 7, pp. 8, 9, 10, 11, **20–25**, 38 (101 stomachs); Bul. 37, pp. 10, **35–42** (443 stomachs).
Relation to orchards, Ybk. 1900, p. 295.
Tapping trees, Bul. 39, p. 91.
Melanerpes formicivorus bairdi—California woodpecker.
Damage to buildings, Bul. 39, p. 14; poles, Bul. 39, p. 11; posts, Bul. 39, p. 13.
Feeding on acorns, Bul. 7, p. 20; Fauna 7, p. 50; grasshoppers, Fauna 7, p. 50; scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 34, pp. **22–24**, 28, 49 (75 stomachs).

Melanerpes formicivorus bairdi—Continued.
Formal report, Bul. 37, pp. 10, **43–45**, 46 (84 stomachs).
Tapping trees, Bul. 39, p. 91.
Visiting sapsucker punctures, Bul. 39, p. 92.

Melanerpes torquatus, see Asyndesmus lewisi.

Meleagris gallopavo merriami—Merriam's turkey.
Feeding on gooseberries, piñon nuts, Fauna 3, p. 89; (*Pinus monophylla*) Fauna 7, p. 337.

Meleagris gallopavo silvestris—Wild turkey.
Damage to grain, Bul. 24, p. 9.
Economic value, Ybk. 1902, p. 206.
Formal report, Bul. 24, pp. 48–52 (16 stomachs).

Melospiza georgiana—Swamp sparrow.
Feeding on boll weevil, Circ. 64, pp. 3, 5.
Formal report, Bul. 15, p. 87 (72 stomachs).

Melospiza lincolni—Lincoln's sparrow.
Formal report, Bul. 15, pp. 15, **86** (31 stomachs).

Melospiza melodia—Song sparrow.
Beneficial, Ybk. 1897, p. 670.
Brief account, Bul. 38, p. 66; F. Bul. 54, pp. **26–27**, 28; F. Bul. 54 (rev.), 31–32.
Feeding on insects, Bul. 1, pp. 295, 323; Fauna 21, p. 48; mulberries, Rept. 1890, p. 285; sand fleas, Fauna 21, p. 48; weed seeds, Ybk. 1898, pp. 222, 223, 224, 225, 226, 227.
Food at Marshall Hall, Bul. 17, pp. 16, 22, 23, 26, 27, 30, 32, 33, 34, 35, 36, 38, 39, 40, 59, 60, 61, 70, 71, 72, 73, 75, 77, 97 (36 stomachs).
Food in California, Bul. 34, pp. 84-86 (321 stomachs).
Formal report, Bul. 15, pp. 13, 15, 21, 24, 26, 27, 28, 31, 32, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, **82–86** (401 stomachs).

Merganser, Hooded, see Lophodytes cucullatus.

Merula migratoria, see Planesticus migratorius.

Micropalama himantopus—Stilt sandpiper.
Feeding on mosquitoes, Circ. 79, p. 2; *Nereis*, Circ. 79, p. 8.

Micropallas whitneyi—Elf owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **200–201**.

Mimus polyglottos—Mocking bird.
Brief account, Bul. 38, p. 84; Ybk. 1900, p. 416.
Damage to fruit, Bul. 30, p. 53; Rept. 1890, p. 281.

Mimus polyglottos—Continued.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 14, 21; Bul. 29, pp. 6, 22, 23, 30; Bul. 38, p. 84, Circ. 64, p. 5; cotton worms, Bul. 25, pp. 20, 21.
Food at Marshall Hall, Bul. 17, pp. 34, 38, 62, **104**, 110.
Food in California, Bul. 30, pp. 52–55 (53 stomachs).
Food of nestlings, Ybk. 1900, p. 416.
Formal report, Ybk. 1895, pp. 405, 406, **415–416** (15 stomachs).
Reference to studies of food habits, Ybk. 1899, p. 266.

Mniotilta varia—Black-and-white creeper.
Brief account, Bul. 38, p. 75.

Mocking bird, see Mimus polyglottos.

Molothrus ater—Cowbird.
Brief account, Bul. 38, p. 57.
Damage to fruit, Bul. 1, p. 246; grain, Rept. 1887, pp. 428, 429, 430–431; Rept. 1898, p. 39; Ybk. 1897, p. 352; Ybk. 1898, p. 222; rice, Bul. 38, p. 57.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 8, 9, 12, 21; Bul. 29, pp. 6, 7, 18, 28, 30; Circ. 64, p. 5; mulberries, Rept. 1890, p. 285; weed seeds, Bul. 29, p. 8; Ybk. 1898, p. 222.
Food at Marshall Hall, Bul. 17, pp. 14, 32, 35, 70, 71, 77, **95**, 111.
Formal report, Bul. 13, pp. 9, **22–30** (544 stomachs).
Other notes, Bul. 15, p. 29.

Munia nisoria, see Padda oryzivora.

Munia oryzivora, see Padda oryzivora.

Murre, Pallas's, see Uria lomvia arra.

Muscivora forficata—Scissor-tailed flycatcher.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 8, 13, 19, 20, 21; Bul. 29, pp. 6, 15, 26, 30; Circ. 64, p. 5.

Myadestes townsendi—Solitaire.
Feeding on berries of *Juniperus occidentalis*, Fauna 16, pp. 123, 133, 139.

Mycteria americana—Wood ibis.
Feeding on field mice, Bul. 31, p. 52.

Myiarchus cinerascens—Ash-throated flycatcher.
Food in California, Bul. 34, pp. 29–32 (80 stomachs).
Other notes, Fauna 7, p. 60.

Myiarchus crinitus—Crested flycatcher.
Brief account, Bul. 38, p. 53.
Feeding on boll weevil, Bul. 29, pp. 6, 14, 15, 23, 29, 30; Circ. 64, p. 5.
Food at Marshall Hall, Bul. 17, pp. 19–20, 23, 24, 29, 30, 32, 34, 35, 37, 38, 40, **93**.
Food of nestlings, Ybk. 1900, p. 426.

Myiochanes richardsoni—Western wood pewee.
Feeding on flies (*Ephydra hians*), Fauna 7, p. 64.

Myiochanes richardsoni—Continued.
Food in California, Bul. 34, pp. 37, 39–41 (137 stomachs).
Myiochanes virens—Wood pewee.
Brief account, Bul. 38, p. 54; Ybk. 1900, p. 427.
Feeding on mulberries, Rept. 1890, p. 285.
Food at Marshall Hall, Bul. 17, pp. 19, 23, 24, 29, 30, 34, 35, 37, 40, 92 (11 stomachs).
Food of nestlings, Ybk. 1900, p. 427.
Myna, Common, see Acridotheres tristis.

N.

Nannus hiemalis—Winter wren.
Brief account, Bul. 30, pp. 65–66.
Feeding on boll weevil, Circ. 64, pp. 4, 5.
Food at Marshall Hall, Bul. 17, p. 107.
Nestor notabilis—Kea.
Killed soon after arrival in Hawaii because of reputation as sheep destroyer, Rept. 1904, pp. 296–297.
Nettion carolinense—Green-winged teal.
Brief account, Bul. 38, p. 19.
Vegetable food, Circ. 81, p. 1.
Nighthawk, see Chordeiles virginianus.
Texas, see Chordeiles acutipennis texensis.
Nucifraga columbiana—Clarke's crow.
Feeding on beetles, blueberries, caterpillars, grasshoppers, Fauna 16, pp. 119–121; piñon nuts, Fauna 3, p. 94; seeds of *Pinus albicaulis*, Fauna 16, p. 119.
Food of adults and nestlings, Ybk. 1900, p. 426.
Other notes, Fauna 5, pp. 18, 100.
Numenius americanus—Long-billed curlew.
Feeding on grasshoppers, Circ. 79, p. 2.
Numenius hudsonicus—Hudsonian curlew.
Feeding on crowberries (*Empetrum nigrum*), Fauna 27, p. 331; Ybk. 1903, p. 377.
Nun, Japanese, see Uroloncha acuticauda.
Nutcracker, Clarke's, see Nucifraga columbiana.
Nuthatch, Pygmy, see Sitta pygmaea.
Red-breasted, see Sitta canadensis.
White-breasted, see Sitta carolinensis.
Nuttallornis borealis—Olive-sided flycatcher.
Feeding on boll weevil, Bul. 29, pp. 6, 15, 24, 30; Circ. 64, p. 5.
Nyctala acadica, see Cryptoglaux acadica.
Nyctala tengmalmi richardsoni, see Cryptoglaux funerea richardsoni.
Nyctea nyctea—Snowy owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Circ. 61, pp. 3, 13; Ybk. 1894, pp. 217, 226.
Nyctea nyctea—Continued.
Feeding on brown rat, Bul. 33, p. 35; field mice, Bul. 31, p. 50; Ybk. 1905, p. 371; pocket gophers, Bul. 5, p. 21; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, pp. 15, 16; varying hares (*Lepus americanus*), Fauna 27, p. 375.
Formal report, Bul. 3, pp. 11, 182–187 (38 stomachs); Rept. 1887, p. 422 (6 stomachs).
Nycticorax nycticorax nævius—Black-crowned night heron.
Brief account, Bul. 38, p. 26; Ybk. 1900, p. 435.
Feeding on carp, Fauna 7, p. 20; field mice, Bul. 31, p. 52.
Food at Marshall Hall, Bul. 17, pp. 53, 81.
Food of nestlings, Ybk. 1900, p. 435.
Injurious to fish, hence exempt from protection in certain States, Bul. 12, p. 36; Bul. 12 (rev.), p. 43.

O.

Oceanodroma melania—Black petrel.
Feeding on refuse from vessel, Fauna 14, p. 28.
Oidemia americana—Scoter.
Feeding on newly sown millet, Bul. 2, p. 73.
Oidemia deglandi—White-winged scoter.
Feeding on wild celery, Circ. 81, p. 8.
Olbiorchilus hiemalis, see Nannus hiemalis.
Olor columbianus—Whistling swan.
Food at Marshall Hall, Bul. 17, p. 81.
Oreortyx picta—Mountain quail.
Formal report, Bul. 21, pp. 58–60 (23 stomachs).
Oreoscoptes montanus—Sage thrasher.
Feeding on buffalo berries, Fauna 33, p. 241.
Oreospiza chlorura—Green-tailed towhee.
Feeding on weed seeds, Ybk. 1898, p. 230.
Oriole, Baltimore, see Icterus galbula.
Bullock's, see Icterus bullocki.
Grayson's, see Icterus graysoni.
Orchard, see Icterus spurius.
Osprey, see Pandion haliaëtus carolinensis.
Otocoris alpestris—Horned lark.
Brief account, Rept. 1905, pp. 305–306.
Damage to grain, Ybk. 1897, p. 352; newly sown wheat, Fauna 7, p. 68.
Feeding on weed seeds, Ybk. 1898, pp. 222, 230, 232.
Food at Marshall Hall, Bul. 17, pp. 70, 71, 93.
Food in California, Bul. 23, pp. 9, 30–32 (267 stomachs); Bul. 34, pp. 44–47 (259 stomachs).
Food in Europe (of the subspecies flava) similar to that of American races, Bul. 23, p. 11.

Otocoris alpestris—Continued.
Formal report, Bul 23, pp. **7–37** (**1,154** stomachs); Rept. 1892, pp. 193–197 (59 stomachs).
Killed by eating poisoned wheat, F. Bul. 352, p. 8.

Otus asio—Screech owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Bounty laws, Ybk. 1899, p. 281.
Brief account, Bul. 31, pp. 49–50; Bul. 38, p. 43; Circ. 61, pp. 3, **12–13** (254 stomachs); Rept. 1889, pp. 372–376; Ybk. 1894, pp. 217, **225–226**; Ybk. 1900, p. 430.
Feeding on brown rat, Bul. 33, p. 34; buckwheat, Bul. 2, p. 121; English sparrow, Bul. 1, pp. 32, 150, 238; Rept. 1886, p. 245; field mice, Bul. 31, pp. 49–50; Ybk. 1905, p. 371; horned larks, Bul. 23, p. 12; seeds, wheat, Bul. 2, p. 121.
Food at Marshall Hall, Bul. 17, pp. 19, 32, 56, **86** (5 stomachs).
Food of nestlings, Ybk. 1900, p. 430.
Formal report, Bul. 3, pp. 11, 14, 146, **163–173** (254 stomachs); Rept. 1887, pp. 420–421 (94 stomachs).
Other notes, Bul. 1, pp. 32, 150, 238; Rept. 1886, p. 245.

Otus flammeolus—Flammulated screech owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **173–174**; Rept. 1889, p. 376.
Feeding on beetles, other insects, and scorpion, Fauna 3, pp. 39, 91.

Ovenbird, see Seiurus aurocapillus.

Owl, American barn, see Aluco pratincola.
Barred, see Strix varia.
Burrowing, see Speotyto cunicularia hypogæa.
Elf, see Micropallas whitneyi.
Ferruginous pygmy, see Glaucidium phalœnoides.
Flammulated screech, see Otus flammeolus.
Florida burrowing, see Speotyto cunicularia floridana.
Great gray, see Scotiaptex nebulosa.
Great horned, see Bubo virginianus.
Hawk, see Surnia ulula caparoch.
Long-eared, see Asio wilsonianus.
Old-world barn, see Aluco flammeus.
Old-world long-eared, see Asio otus.
Pygmy, see Glaucidium gnoma.
Richardson's, see Cryptoglaux funerea richardsoni.
Saw-whet, see Cryptoglaux acadica.
Screech, see Otus asio.
Short-eared, see Asio flammeus.
Snowy, see Nyctea nyctea.
Spotted, see Strix occidentalis.

Oxyechus vociferus—Killdeer.
Feeding on army worm, billbugs, Circ. 79, p. 6; boll weevils, Bul. 22, pp. 15, 16; Bul. 25, pp. 8, 9, 14, 21; Bul. 29, pp. 6, 7, 11, 20–21, 27, 30; Circ. 57, p. 4; Circ. 64, p. 5; Circ. 79, p. 6; click beetles, clover-leaf beetle, clover-root curculio, corn-leaf beetle, cotton worm, cotton cutworm, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; crayfishes, cutworms, Circ. 79, p. 6; Dytiscidæ, Circ. 79, p. 8; grapevine colaspis, Circ. 79, p. 6; grasshoppers, Circ. 79, p. 2; horseflies, Circ. 79, p. 4; mosquitoes, Circ. 79, p. 2; Rept. 1908, p. 577; *Nereis*, Circ. 79, p. 8; rice weevil, tobacco worm, wireworms, Circ. 79, p. 6.
Killed by eating poisoned grain, Ybk. 1908, p. 308.
Other notes, Bul. 22, pp. 15–16; Bul. 29, p. 27.

Oxeye, see Parus major.

P.

Padda oryzivora—Java sparrow.
Admission to Hawaii denied, Rept. 1909, p. 542.
Damages rice, Ybk. 1906, p. 177.
Injurious in Hawaii, Rept. 1902, p. 213.

Paddy bird, see Padda oryzivora.

Pandion haliaëtus carolinensis—Osprey.
Bounty laws, Ybk. 1899, pp. 266, 279, 280, 281.
Brief account, Bul. 38, p. 41.
Food at Marshall Hall, Bul. 17, pp. 19, 53.
Food of nestlings, Ybk. 1900, p. 430.
Formal report, Bul. 3, pp. 15, 16, **130–132** (12 stomachs).
Injurious, Bul. 38, p. 10.
Protected, or excepted from bounty laws in certain States, Bul. 12, p. 29; Bul. 12 (rev.), p. 32; Ybk. 1899, pp. 266, 279.

Parabuteo unicinctus harrisi—Harris's hawk.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on cotton rat (*Sigmodon hispidus texianus*), Fauna 25, p. 116; rabbits, Ybk. 1907, p. 336; spermophiles, Bul. 4, pp. 16, 17; wood rat (*Neotoma micropus*), Fauna 25, p. 112.
Formal report, Bul. 3, pp. 11, **47–48** (6 stomachs).

Paroquet, Carolina, see Conuropsis carolinensis.

Parrot, Double yellow-headed, see Amazona oratrix.
Mountain, see Nestor notabilis.

Partridge, European common, see Perdix perdix.
Hungarian, see Perdix perdix.
Spruce, see Canachites canadensis.
Parus atricapillus, see Penthestes atricapillus.
Parus bicolor, see Bæolophus bicolor.
Parus cæruleus, see Cyanistes cæruleus.
Parus carolinensis, see Penthestes carolinensis.
Parus gambeli, see Penthestes gambeli.
Parus inornatus, see Bæolophus inornatus.
Parus major—Great titmouse.
Admission denied, Rept. 1902, p. 213; Ybk. 1905, p. 545.
Economic status, introduction dangerous, etc., Rept. 1899, p. 67; Ybk. 1898, pp. 90, 104–105, 107, 109, 110.
Parus palustris, see Pœcile palustris.
Parus rufescens, see Penthestes rufescens.
Parus wollweberi, see Bæolophus wollweberi.
Passer domesticus—English sparrow.
Admission denied, Circ. 34, p. 7; F. Bul. 160, p. 48; F. Bul. 180, p. 42; F. Bul. 470, p. 301; Rept. 1900, p. 41.
Admission to West Australia prohibited, Rept. 1899, p. 68.
Bounty laws, Circ. 17, p. 4; Rept. 1899, p. 65; Ybk. 1896, pp. 55, 58, 59, 60, 61, 66, 67; Ybk. 1899, p. 265.
Brief account, Bul. 9, pp. 17, 18, 20; Bul. 38, p. 60; F. Bul. 383, p. 5; Ybk. 1900, pp. 420–422.
Driving other birds away, Bul. 29, p. 11; Ent. Circ. 20 [p. 2]; Circ. 2 [p. 1]; Circ. 56, pp. 2, 3; Circ. 57, pp. 3–4; F. Bul. 383, p. 6; Rept. 1907, p. 486; Schedule 4 [p. 1].
Economic status, introduction dangerous, etc., F. Bul. 160, p. 48; F. Bul. 180, p. 42; Rept. 1886, p. 258; Rept. 1906, pp. 406, 415; Rept. 1907, p. 493; Ybk. 1898, pp. 90, 98–101, 104, 108, 109, 110; Ybk. 1899, pp. 287, 290, 292; Ybk. 1904, p. 515; Ybk. 1905, p. 546; Ybk. 1909, p. 249.
Feeding on mulberries, Rept. 1890, p. 285; potato beetle, Bul. 32, p. 47; scale insects, Ybk. 1906, pp. 191, 196; weed seeds, Ybk. 1898, pp. 223–224, 225, 232.
Food habits at Marshall Hall, Bul. 17, pp. 17, 23, 24, 28, 30, 34, 36, 38, 56, 61, 66, **68–69**, 70, 98, 110 (53 stomachs).
Food of nestlings, Ybk. 1900, pp. 420–422, 436.
Formal report, Bul. 1, pp. **1–405** (636 stomachs); Bul. 15, pp. 15, 17, 21, 26, 27, 31, 32, 34, 39, 40, 48, 49, 50, **92–96** (798 stomachs); Rept. 1886, pp. 235–246.
Passer domesticus—Continued.
Injurious, Bul. 12, pp. 13, 35, 36; Bul. 12 (rev.), pp. 20, 21, 42; Bul. 31, pp. 38, 43, 45, 60; F. Bul. 160, p. 48; F. Bul. 180, p. 42; F. Bul. 470, p. 30; Rept. 1886, p. 258; Rept. 1889, p. 374; Rept. 1891, p. 271; Rept. 1899, pp. 68–69; Rept. 1901, p. 160; Rept. 1906, pp. 406, 415; Rept. 1907, pp. 500–501; Ybk. 1895, p. 418; Ybk. 1897, p. 670; Ybk. 1898, pp. 223, 232; Ybk. 1904, p. 515; Ybk. 1905, p. 546; Ybk. 1907, pp. 173–174, 177; Ybk. 1909, p. 249.
Injurious in Australasia, Rept. 1899, pp. 68–69; Hawaii, Rept. 1902, p. 213; Ybk. 1899, p. 290; India, Bul. 1, p. 303.
Methods of destroying, F. Bul. 383, pp. 6–11; Rept. 1887, pp. 423–426; Rept. 1899, p. 66.
Other notes, Rept. 1887, pp. 400–401, 424–426; Rept. 1891, p. 271; Rept. 1899, p. 66; Rept. 1907, pp. 493, 500–501; Rept. 1908, pp. 577–578, 586–587; Rept. 1909, pp. 539–540; Ybk. 1895, p. 418.
Reference to studies of food habits, Ybk. 1899, pp. 264–265, 266, 291.
Repressive measures employed in California, Rept. 1908, pp. 577–578, 586–587; Rept. 1909, pp. 539–540.
Request for information on economic relations, Ent. Circ. 20 [p. 2]; Circ. 2 [p. 1]; Rept. 1886, p. 231; Schedule 4 [1].
Sparrow hunts, Ybk. 1896, p. 67.
Passer hispaniolensis—Spanish sparrow.
Injurious in Algeria, Bul. 1, p. 302.
Passer indicus, see Passer domesticus (Injurious in India).
Passer montanus—Tree sparrow.
Economic status and introduction, Bul. 1, pp. 191–194; Ybk. 1899, pp. 287–288.
Passerculus princeps—Ipswich sparrow.
Formal report, Bul. 15, p. 59 (56 stomachs).
Passerculus sandwichensis—Savanna sparrow.
Brief account, Bul. 38, p. 62.
Feeding on boll weevil, Bul. 22, pp. 11, 16; Bul. 25, pp. 9, 21; Bul. 29, pp. 6, 19, 27, 28, 30; Bul. 38, pp. 9, 62; Circ. 64, pp. 3, 4, 5.
Food at Marshall Hall, Bul. 17, pp. 15, 30, 32, 35, 38, 71, 73.
Formal report, Bul. 15, pp. 37, **59–61**, 90 (119 stomachs).
Insectivorous, Bul. 1, p. 323.
Passerella iliaca—Fox sparrow.
Feeding on boll weevil, Circ. 64, pp. 3, 5; weed seeds, Bul. 15, p. 27; F. Bul. 54, p. 28; F. Bul. 54 (rev.), p. 32; Ybk. 1898, pp. 222, 226, 227.

Passerella iliaca—Continued.
Food at Marshall Hall, Bul. 17, pp. 16, 77.
Formal report, Bul. 15, pp. 27, 28, 37, 42, 43, 74, 83, **87–89** (127 stomachs).
Passerherbulus caudacutus—Sharp-tailed sparrow.
Formal report, Bul. 15, pp. 64–65.
Passerherbulus henslowi—Henslow's sparrow.
Food at Marshall Hall, Bul. 17, pp. 32, 35, 38, 39.
Formal report, Bul. 15, pp. 24, **63–64** (7 stomachs).
Passerherbulus maritimus — Seaside sparrow.
Formal report, Bul. 15, pp. 65–66 (30 stomachs).
Passerherbulus nelsoni—Nelson's sparrow.
Formal report, Bul. 15, pp. 64–65.
Passerina ciris—Painted bunting.
Feeding on boll weevil, Bul. 25, pp. 9, 12, 17, 18, 20–21; Bul. 29, pp. 6, 9, 19, 30; Bul. 38, p. 9; Circ. 64, p. 5.
Passerina cyanea—Indigo bunting.
Brief account, Bul. 38, pp. 9, 68.
Food at Marshall Hall, Bul. 17, p. 98.
Passerina nivalis, see Plectrophenax nivalis.
Pediœcetes phasianellus — Sharp-tailed grouse.
Favorite vegetable foods, Ybk. 1909, p. 194.
Feeding on ants, barley, beetles, Fauna 27, p. 350; berries of *Viburnum pauciflorum*, catkins of alders (*Alnus alnobetula* and *A. incana*), Fauna 27, p. 349; leaves, myriapods, Fauna 27, p. 350; potato beetle, Bul. 32, p. 47.
Formal report, Bul. 24, pp. **20–23** (43 stomachs).
Peep, see Ereunetes pusillus.
Pelecanus fuscus, see Pelecanus occidentalis.
Pelecanus occidentalis—Brown pelican.
Food of nestlings, Ybk. 1900, pp. 434–435.
Pelican, Brown, see Pelecanus occidentalis.
Pelidna alpina sakhalina—Red-backed sandpiper.
Feeding on Dytiscidæ, *Nereis*, Circ. 79, p. 8.
Penthestes atricapillus—Black-capped chickadee.
Beneficial, Ybk. 1897, p. 670.
Brief account, F. Bul. 54 (rev.), pp. 43–44 (289 stomachs); Ybk. 1900, pp. 295–296.
Feeding on eggs of fall cankerworms, Bul. 17, p. 108; larvæ of codling moth (probably), Ybk. 1898, p. 105; plant lice, Bul. 17, p. 108; scale insects, Ybk. 1906, p. 197.
Penthestes atricapillus—Continued.
Reference to studies of food habits, Ybk. 1899, pp. 263–264.
Relations to orchards, Ybk. 1900, pp. 295–296.
Penthestes carolinensis—Carolina chickadee.
Brief account, Bul. 38, p. 89.
Feeding on boll weevil, Circ. 64, pp. 4, 5; scale insects, Ybk. 1906, p. 197; seeds of ragweed, Bul. 15, p. 42.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 34, 35, 39, 60, 71, 77, **107–108** (7 stomachs).
Other notes, F. Bul. 54 (rev.), p. 44.
Penthestes gambeli—Mountain chickadee.
General nature of food, Bul. 30, p. 71.
Penthestes rufescens — Chestnut-backed chickadee.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 70–71 (57 stomachs).
Perdix perdix—European common partridge.
Brief account, Ybk. 1909, p. 252.
Perisoreus canadensis—Canada jay.
Feeding on carrion, Fauna 30, p. 89; crowberries (*Empetrum nigrum*), Fauna 27, p. 401; refuse and scraps of meat about camp, Fauna 24, p. 71; Fauna 30, pp. 40, 62.
Other notes, Fauna 5, p. 18; Fauna 30, p. 89.
Useful as scavengers, Fauna 30, p. 61.
Petrel, Black, see Oceanodroma melania.
Petrochelidon lunifrons—Cliff swallow.
Beneficial, Bul. 1, p. 89.
Brief account, Bul. 38, p. 70; F. Bul. 54, p. 31; F. Bul. 54 (rev.), pp. 36–38.
Feeding on boll weevil, Bul. 29, pp. 6, 12–13, 24–25, 30; Bul. 38, p. 70; Circ. 64, p. 5.
Food in California, Bul. 30, pp. 28–30 (123 stomachs).
Protection urged, as enemy of boll weevil, Circ. 56, pp. 1, 2, 3, 4; Circ. 57, pp. 1, 2.
Relation to bedbugs, Bul. 29, pp. 8, 13; Circ. 56, p. 2; Circ. 57, p. 2; bees, Rept. 1904, p. 294.
Pewee, Western wood, see Myiochanes richardsoni.
Wood, see Myiochanes virens.
Phainopepla nitens—Phainopepla.
Damage to fruit, Bul. 32, p. 61.
Feeding on insects, mistletoe berries, Fauna 7, p. 113.
Phalacrocorax auritus—Double-crested cormorant.
Feeding on fish, Bul. 38, p. 16.
Phalacrocorax urile—Red-faced cormorant.
Food of nestlings, Ybk. 1900, p. 434.
Phalarope, Northern, see Lobipes lobatus.
Wilson's, see Steganopus tricolor.

Phalaropus lobatus, see Lobipes lobatus.
Phaleris psittacula—Paroquet auklet.
Food of nestlings, Ybk. 1900, p. 433.
Phasianus colchicus—Common pheasant.
Feeding on galls, Bul. 24, p. 31.
Phasianus torquatus—Ring-necked pheasant.
Damage to gardens and grain, Rept. 1888, pp. 486, 487, 488; Ybk. 1897, pp. 352–353.
Food of young in captivity, Ybk. 1900, p. 432.
Pheasant, Common, see Phasianus colchicus.
English, see Phasianus colchicus.
Ring-necked, see Phasianus torquatus.
Philohela minor—Woodcock.
Brief account, Ybk. 1900, p. 432; Ybk. 1901, p. 449.
Feeding on click beetles, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; cutworms, Circ. 79, p. 6; grasshoppers, Circ. 79, p. 4; wireworms, Circ. 79, p. 6.
Food at Marshall Hall, Bul. 17, pp. 19, 21, 24, 38, **82–83.**
Food of nestlings, Ybk. 1900, p. 432.
Phlœotomus pileatus—Pileated woodpecker.
Brief account, Bul. 38, p. 48.
Distributing poison Rhus seeds, Rept. 1890, p. 283.
Formal report, Bul. 7, pp. 8, 10, 11, **32,** 38, 39 (23 stomachs); Bul. 37, pp. 10, **33–35** (80 stomachs).
Relation to trees, Bul. 39, p. 8.
Phœbe, see Sayornis phœbe.
Black, see Sayornis nigricans.
Say's, see Sayornis sayus.
Pica pica hudsonia—Magpie.
Feeding on carrion, Fauna 5, p. 99; field mice (*Microtus montanus*), F. Bul. 335, p. 12.
Killed by eating poisoned grain, F. Bul. 352, p. 8; Ybk. 1908, p. 308.
Other notes, Fauna 5, p. 18; Fauna 19, p. 80.
Picicorvus columbianus, see Nucifraga columbiana.
Picoides americanus—Three-toed woodpecker.
Brief account, Bul. 7, p. 33.
Formal report, Bul. 37, pp. 10, 11, **25–27** (23 stomachs).
Picoides arcticus—Arctic three-toed woodpecker.
Brief account, Bul. 7, p. 33.
Feeding on scale insects, Ybk. 1906, p. 197.
Formal report, Bul. 37, pp. 10, 11, **25–27** (28 stomachs).
Pigeon, Band-tailed, see Columba fasciata.
Common, see Columba livia.
Passenger, see Ectopistes migratorius.
Tres Marias, see Columba flavirostris madrensis.
Pigeon, Wild, see Ectopistes migratorius.
Wood, see Columba palumbus.
Pinicola enucleator alascensis—Alaska pine grosbeak.
Feeding on seeds of alder (*Alnus alnobetula*), Fauna 27, p. 415; dwarf birch (*Betula nana*), Fauna 27, p. 414.
Pinicola enucleator leucura—Pine grosbeak.
Brief account, Bul. 32, p. 5.
Pintail, see Dafila acuta.
Pipilo crissalis—California towhee.
Feeding on scale insects, Ybk. 1906, p. 194; weed seeds, Ybk. 1898, p. 230.
Food in California, Bul. 34, pp. 89–93 (399 stomachs).
Pipilo erythrophthalmus—Towhee.
Brief account, Bul. 38, p. 67.
Feeding on boll weevil, Bul. 29, pp. 6, 20, 28, 30; Circ. 64, p. 5; weed seeds, Ybk. 1898, p. 230.
Food at Marshall Hall, Bul. 17, pp. 30, 34, 35, 38, **98.**
Food of nestlings, Ybk. 1900, p. 418.
Pipilo maculatus megalonyx—Spurred towhee.
Feeding on scale insects, Ybk. 1906, p. 194.
Pipilo maculatus subspecies—Spotted towhees.
Food in California, Bul. 34, pp. 86–89 (139 stomachs).
Pipit, see Anthus rubescens.
Piranga bidentata flammea—Tres Marias tanager.
Feeding on wild fig, Fauna 14, p. 61.
Piranga erythromelas—Scarlet tanager.
Brief account, Bul. 38, p. 69; Ybk. 1900, pp. 418–419.
Feeding on mulberries, Rept. 1890; p. 285; potato beetle, Bul. 32, p. 47.
Food at Marshall Hall, Bul. 17, pp. 20, 29, 30, 39, 40, **98.**
Food of nestlings, Ybk. 1900, pp. 418–419.
Piranga ludoviciana—Western tanager.
Damage to fruit, Bul. 32, p. 61.
Feeding on beetle, Fauna 7, p. 108; caterpillars, Fauna 16, p. 127.
Food in California, Bul. 30, pp. 9, **23–26** (46 stomachs).
Other notes, Fauna 14, p. 52.
Relation to fruit in California, Ybk. 1904, p. 242.
Piranga rubra—Summer tanager.
Brief account, Bul. 38, p. 70.
Food at Marshall Hall, Bul. 17, pp. 40, 60, 61, **98.**
Pisobia bairdi—Baird's sandpiper.
Feeding on clover root curculio, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; cutworms, Circ. 79, p. 6; grasshoppers, Circ. 79, p. 4; mosquitoes, Circ. 79, p. 2.

Pisobia fuscicollis — White-rumped sandpiper.
Feeding on clover root curculio, Circ. 79, p. 6; grasshoppers, Circ. 79, p. 4.
Pisobia maculata—Pectoral sandpiper.
Feeding on bill-bugs, click beetles, clover root curculio, corn-leaf beetle, Circ. 79, p. 6; crane flies, Circ. 79, p. 2; cutworms, Circ. 79, p. 6; Dytiscidæ, Circ. 79, p. 8; horseflies, Circ. 79, p. 4; mosquitoes, Circ. 79, p. 2; wireworms, Circ. 79, p. 6.
Pisobia minutilla—Least sandpiper.
Feeding on grasshoppers, Circ. 79, p. 4; mosquitoes, Circ. 79, p. 2.
Planesticus graysoni—Tres Marias robin.
Feeding on wild fig, Fauna 14, p. 61.
Planesticus migratorius—Robin.
Beneficial, Ybk. 1897, p. 670.
Brief account, Bul. 12, p. 23; Bul. 12 (rev.), pp. 29–30; Bul. 38, p. 92; F. Bul. 54, pp. 37–38 (330 stomachs); F. Bul. 54 (rev.), pp. 44–46 (500 stomachs); Ybk. 1900, pp. 303, 304, 413; Ybk. 1907, pp. 168–169, 175, 178.
Damage to fruit, Bul. 30, pp. 11, 20; Rept. 1901, p. 153; Ybk. 1904, pp. 243, 244, 252–253; Ybk. 1907, pp. 168–169, 175, 178; grapes, Bul. 1, pp. 53, 270, 324.
Feeding on buffalo berries, Fauna 7, p. 147, cankerworm moths, Bul. 1, p. 110; cherries, Bul. 1, p. 60; Bul. 32, p. 91; crowberries, Fauna 27, p. 497; cutworms, Bul. 1, p. 286; earthworms, Bul. 1, pp. 86, 94, 264, 275, 297, 305; Ybk. 1895, p. 411; gipsy moth, Rept. 1910, p. 553; mulberries, Bul. 32, p. 65; Rept. 1890, p. 285; peaches, pears, Bul. 1, p. 270; peas, Bul. 1, p. 60; potato beetle, Bul. 32, p. 47; tussock moth caterpillar, Bul. 1, pp. 108, 109, 324; Rept. 1886, p. 244; snowberry (probably), wild grape, Bul. 2, p. 290.
Food at Marshall Hall, Bul. 17, pp. 14, 32, 35, 37, 38, 43, 59, 62, **108–109** (9 stomachs).
Food in California, Bul. 30, pp. 9, 20, 23, **93–97** (74 stomachs).
Food of nestlings, Ybk. 1900, pp. 411, 413, 436.
Insectivorous, Bul. 12, p. 14; Bul. 12 (rev.), p. 22; Bul. 38, p. 9.
Other notes, Bul. 1, pp. 126, 304; Bul. 30, pp. 11, 20, 94; Ybk. 1908, p. 346.
Reference to studies of food habits, Ybk. 1899, pp. 261–262, 263, 264, 266.
Relation to fruit in California, Bul. 30, p. 20, Rept. 1901, p. 153; Ybk. 1904, pp. 243, 252–253.
Planesticus migratorius—Continued.
Relation to orchards, Ybk. 1900, pp. 303, 304; Ybk. 1907, pp. 168–169, 175–178.
Request for information on economic relations, Ent. Circ. 20 [p. 2].
Robbed of food by English sparrow, Bul. 1, pp. 86, 94, 264, 275, 286, 297, 305.
Plectrophenax nivalis—Snow bunting.
Feeding on seeds of grasses, Fauna 27, p. 421; and weeds, Fauna 27, p. 421; Ybk. 1898, pp. 222, 226, 227.
Formal report, Bul. 15, pp. 25, 27, 28, 45, **51–54** (46 stomachs).
Pulling wheat, Bul. 23, p. 16.
Plover, Black-bellied, see Squatarola squatarola.
Golden, see Charadrius dominicus.
Mountain, see Podasocys montanus.
Piping, see Ægialitis meloda.
Ringed, see Ægialitis hiaticula.
Semipalmated, see Ægialitis semipalmata.
Snowy, see Ægialitis nivosa.
Upland, see Bartramia longicauda.
Podasocys montanus—Mountain plover.
Feeding on grasshoppers, Circ. 79, p. 2.
Podilymbus podiceps—Pied-billed grebe.
Food at Marshall Hall, Bul. 17, p. 79.
Harmless, Bul. 38, p. 14.
Pœcile palustris—Marsh titmouse.
Feeding on scale insects, Ybk. 1906, p. 191.
Polioptila cærulea—Blue-gray gnatcatcher.
Brief account, Bul. 38, p. 90.
Food at Marshall Hall, Bul. 17, pp. 24, 34, **108.**
Food in California, Bul. 30, pp. 84–86 (30 stomachs).
Polioptila californica—Black-tailed gnatcatcher.
Feeding on scale insects, Ybk. 1906, pp. 194, 198.
Food in California, Bul. 30, pp. 84–86 (30 stomachs).
Polyborus cheriway—Caracara.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **128–129.**
Feeding on carrion, Bul. 2, p. 120; jack rabbits, Bul. 8, p. 44; prairie dogs, Bul. 2, p. 120.
Food on Tres Marias Islands, carrion, iguanas, Fauna 14, p. 39; and *Lepus graysoni,* Fauna 14, p. 17.
Polyborus tharus—Carancho.
Attempting to carry off wounded duck, Bul. 3, p. 128.
Pocecetes gramineus—Vesper sparrow.
Feeding on boll weevil, Circ. 64, pp. 3, 5; weed seeds, Ybk. 1898, pp. 226, 227, 229.
Food at Marshall Hall, Bul. 17, p. 15.

Poœcetes gramineus—Continued.
Formal report, Bul. 15, pp. 28, 37, 45, **56–58**, 92 (130 stomachs).
Porzana carolina—Sora.
Food at Marshall Hall, Bul. 17, pp. 19, **81**.
Prairie chicken, see Tympanuchus americanus.
Lesser, see Tympanuchus pallidicinctus.
Progne subis—Purple martin.
Brief account, Bul. 38, p. 70; Bul. 30, p. 27; F. Bul. 54, p. 31; F. Bul. 54 (rev.), pp. 5, **36–38**.
Feeding on boll weevil, Bul. 29, pp. 6, 9, 14, 25, 30; Bul. 38, p. 70; Circ. 64, p. 5.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 25, 39, 40, **47**, 98–99.
Food of nestlings, Ybk. 1900, p. 417.
Insectivorous, Bul. 38, p. 9; Bul. 1, p. 96.
Nesting boxes, Bul. 29, pp. 9–11.
Other notes, Bul. 1, p. 274.
Prepared food, Circ. 56, p. 3.
Protection urged, as enemy of boll weevil, Circ. 56, pp. 1, 3–4; Circ. 57, pp. 2, 3, 4.
Protonotaria citrea—Prothonotary warbler.
Insectivorous, Bul. 38, p. 75.
Psaltriparus minimus—Bushtit.
Brief account, F. Bul. 54 (rev.), p. 44 (66 stomachs); Ybk. 1900, p. 296.
Feeding on noxious insects, Ybk. 1904, p. 253; scale insects, Ybk. 1906, pp. 194, 195, 198.
Food in California, Bul. 30, pp. 74–80 (353 stomachs).
Relation to orchards, Ybk. 1900, p. 296.
Pseudogryphus californianus, see Gymnogyps californianus.
Psittacula insularis—Tres Marias love bird.
Feeding on wild fig, Fauna 14, pp. 41, 61.
Ptarmigan, Rock, see Lagopus rupestris.
White-tailed, see Lagopus leucurus.
Willow, see Lagopus lagopus.
Puffin, Horned, see Fratercula corniculata.
Tufted, see Lunda cirrhata.
Pyrrhuloxia sinuata—Gray grosbeak.
Brief account, F. Bul. 456, p. 12.
Feeding on boll weevil, Bul. 25, pp. 9, 12, 18, 21; Bul. 29, pp. 6, 19, 30; Circ. 64, p. 5.
Formal report, Bul. 32, pp. **28–33**, 90, 91 (74 stomachs).

Q.

Quail, California, see Lophortyx californica.
Gambel's, see Lophortyx gambeli.
Mearns's, see Cyrtonyx montezumæ mearnsi.
Mountain, see Oreortyx picta.
Scaled, see Callipepla squamata.
Querquedula discors—Blue-winged teal.
Brief account, Bul. 38, p. 19.
Vegetable food, Circ. 81, p. 1.
Quiscalus major, see Megaquiscalue major.
Quiscalus quiscula—Crow blackbird.
Brief account, Bul. 38, p. 60; F. Bul. 54, pp. 4, **24–26** (2,258 stomachs); F. Bul. 54 (rev.), pp. 4, 25, **29–30** (2,346 stomachs); Rept. 1887, pp. 428, 429, 430; Rept. 1890, p. 279; Ybk. 1897, pp. 348–349; Ybk. 1900, pp. 412, 423.
Damage to corn, Bul. 17, p. 96; Bul. 29, p. 8; grain, Rept. 1887, pp. 428, 429, 430; Rept. 1889, pp. 368–369; Rept. 1898, p. 39; Ybk. 1897, pp. 348–349; Ybk. 1898, p. 230.
Feeding on boll weevil, Bul. 29, pp. 6, 7, 8, 11, 17, 27, 30; Bul. 38, p. 60; Circ. 64, p. 5; eggs and young of other birds, Rept. 1888, p. 514; English sparrows, Bul. 1, p. 32; mulberries, Rept. 1890, p. 285; rose beetle, Bul. 32, p. 20; weed seeds, Ybk. 1898, pp. 222, 230.
Food at Marshall Hall, Bul. 17, pp. 14, 21, 23, 24, 30, 32, 35, 37, **47–48, 49**, 55, 56, 59, 60, **66–68**, 70, 71, 77, **96**, 110 (25 stomachs).
Food of nestlings, Ybk. 1900, pp. 412–413, 423–424, 436.
Formal report, Bul. 13, pp. 8, 9, 10, **53–70** (2,346 stomachs); Ybk. 1894, pp. 233–248 (2,258 stomachs).
Injurious to grain, hence unprotected in certain States, Bul. 12, pp. 36, 37; Bul. 12 (rev.), p. 43.
Other notes, Bul. 15, p. 29; Ybk. 1898, p. 104.
Reference to studies of food habits, Ybk. 1899, pp. 263, 264, 265, 266.
Requests for information on economic value, Ent. Circ. 20 [p. 1]; Circ. 1 [p. 2]; Rept. 1886, p. 230.

R.

Raven, Northern, see Corvus corax principalis.
Old-world, see Corvus corax corax.
Southern, see Corvus corax sinuatus.
White-necked, see Corvus cryptoleucus.
Recurvirosta americana—Avocet.
Feeding on billbugs, cutworms, Circ. 79, p. 6; Dytiscidae, Circ. 79, p. 8; grasshoppers, Circ. 79, p. 4.
Redbird, see Cardinalis cardinalis.
Redhead, see Marila americana.
Redpoll, see Acanthis linaria.
Hoary, see Acanthis hornemanni exilipes.
Redstart, see Setophaga ruticilla.
Regulus calendula—Ruby-crowned kinglet.
Feeding on scale insects, Ybk. 1906, pp. 197, 198.

Regulus calendula—Continued.
Food at Marshall Hall, Bul. 17, pp. 20, 108.
Food in California, Bul. 30, pp. 48, **81–84** (294 stomachs).
Other notes, Ybk. 1904, p. 254.
Regulus satrapa—Golden-crowned kinglet.
Food at Marshall Hall, Bul. 17, pp. 20, 108.
Food in California, Bul. 30, p. 84 (9 stomachs).
Other notes, Bul. 9, p. 18; Ybk. 1904, p. 254.
Rhynchophanes mccowni—McCown's longspur.
Feeding on weed seeds, Ybk. 1898, p. 226.
Ricebird [American], see Dolichonyx oryzivorus.
[Javan], see Padda oryzivora.
Ringneck, see Ægialitis semipalmata.
Riparia riparia—Bank swallow.
Brief account, Bul. 38, p. 71; Ybk. 1900, p. 418.
Feeding on ants, Bul. 15, p. 32; bayberries, Rept. 1890, p. 282; boll weevil, Bul. 29, pp. 6, 14, 24, 25, 30; Bul. 38, p. 71; Circ. 56, pp. 1–2; Circ. 57, p. 2; Circ. 64, p. 5.
Food at Marshall Hall, Bul. 17, pp. 24, 25, 33, 34, 35, 36, 39, 40, **46–47**, 98–99 (6 stomachs).
Food of nestlings, Ybk. 1900, p. 418.
Other notes, Bul. 30, p. 27.
Protection urged as enemy of boll weevil, Circ. 56, pp. 1–2; Circ. 57, p. 2.
Rissa tridactyla pollicaris—Pacific kittiwake.
Food of nestlings, Ybk. 1900, pp. 433–434.
Road runner, see Geococcyx californianus.
Robin [of the United States], see Planesticus migratorius.
Tres Marias, see Planesticus graysoni.
Rook, see Corvus frugilegus.
Rostrhamus sociabilis—Everglade kite.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. **11, 25–26**; Circ. 61, pp. 3, **4**; Ybk. 1894, pp. 217, **218**.

S.

Sage hen, see Centrocercus urophasianus.
Salpinctes obsoletus—Rock wren.
Note on general nature of food, Bul. 30, pp. 65–66.
Sandpiper, Baird's, see Pisobia bairdi.
Buff-breasted, see Tryngites subruficollis.
Least, see Pisobia minutilla.
Pectoral, see Pisobia maculata.
Purple, see Arquatella maritima.
Red-backed, see Pelidna alpina sakhalina.
Sandpiper, Semipalmated, see Ereunetes pusillus.
Solitary, see Helodromas solitarius.
Spotted, see Actitis macularia.
Stilt, see Micropalama himantopus.
White-rumped, see Pisobia fuscicollis.
Sapsucker, Red-breasted, see Sphyrapicus ruber.
Williamson's, see Sphyrapicus thyroideus.
Yellow-bellied, see Sphyrapicus varius.
Sayornis nigricans—Black phœbe.
Brief account, F. Bul. 54 (rev.), pp. 17–18 (119 stomachs).
Food in California, Bul. 34, pp. 36–39 (333 stomachs).
Sayornis phœbe—Phœbe.
Brief account, Bul. 38, p. 53; F. Bul. 54, pp. 13–14 (80 stomachs); F. Bul. 54 (rev.), pp. 16–17 (156 stomachs); Ybk. 1900, p. 426.
Feeding on boll weevil, Bul. 22, pp. 10, 16; Bul. 25, pp. 8, 13, 21; Bul. 29, pp. 6, 15, 26, 30; Bul. 38, p. 53; Circ. 64, p. 5; mulberries, Rept. 1890, p. 285; rose beetle, Bul. 32, p. 20.
Food at Marshall Hall, Bul. 17, pp. 23, 24, 30, 32, 33, 34, 37, 38, 40, 61, **92–93**.
Food of nestlings, Ybk. 1900, pp. 426–427.
Sayornis sayus—Say's phœbe.
Food in California, Bul. 34, pp. 35–36 (86 stomachs).
Scolecophagus carolinus, see Euphagus carolinus.
Scolecophagus cyanocephalus, see Euphagus cyanocephalus.
Scoter, see Oidemia americana.
White-winged, see Oidemia deglandi.
Scotiaptex cinerea, see Scotiaptex nebulosa.
Scotiaptex nebulosa—Great gray owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Feeding on field mice, Bul. 31, p. 50; Ybk. 1905, p. 371; rabbits, Fauna 27, p. 369; shrews, Fauna 27, p. 370.
Formal report, Bul. 3, pp. 11, **157–158** (9 stomachs).
Seiurus aurocapillus—Ovenbird.
Food at Marshall Hall, Bul. 17, pp. 20, 29, 34, 35, 103–104.
Food of nestlings, Ybk. 1900, p. 416.
Seiurus motacilla—Louisiana water-thrush.
Food at Marshall Hall, Bul. 17, pp. **20**, 38, 40, 103–104.

Seiurus noveboracensis—Water-thrush.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 34, 35, 38, 39, 103–104.
Setophaga ruticilla—Redstart.
Brief account, Bul. 38, p. 83.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 29, 40, 103–104 (5 stomachs).
Food of nestlings, Ybk. 1900, p. 416.
Shoveler, see Spatula clypeata.
Shrike, Great gray, see Lanius excubitor.
Loggerhead, see Lanius ludovicianus.
Northern, see Lanius borealis.
Sialia arctica, see Sialia currucoides.
Sialia currucoides—Mountain bluebird.
Brief account, F. Bul. 54, p. 48.
Other notes, Bul. 30, p. 100.
Sialia mexicana occidentalis—Western bluebird.
Brief account, F. Bul. 54 (rev.), p. 48 (92 stomachs).
Feeding on scale insects, Ybk. 1906, pp. 194, 198.
Food in California, Bul. 30, pp. 97–100 (187 stomachs).
Sialia sialis—Bluebird.
Beneficial, Ybk. 1897, p. 670.
Brief account, Bul. 38, p. 92; F. Bul. 54, p. 39 (205 stomachs); F. Bul. 54 (rev.), pp. 5, **46–48** (300 stomachs); Ybk. 1900, p. 413.
Distributing poison Rhus seeds, Rept. 1889, p. 368; Rept. 1890, p. 283.
Feeding on army worm, Bul. 1, p. 290; codling moth, Bul. 1, p. 320; cutworms, Bul. 1, p. 290; dogwood berries, Rept. 1890, p. 284; mahaleb cherries, Bul. 32, p. 65; mulberries, Bul. 32, p. 64; sourgum berries, Rept. 1890, p. 285.
Food at Marshall Hall, Bul. 17, pp. 32, 38, 43, 60, 62, **109–110** (7 stomachs).
Food of nestlings, Ybk. 1900, p. 413.
Insectivorous, Bul. 38, p. 9; Bul. 1, pp. 96, 126, 304.
Other notes, Bul. 1, pp. 94, 297.
Reference to studies of food habits, Ybk. 1899, pp. 263, 266.
Siskin, Pine, see Spinus pinus.
Sitta canadensis—Red-breasted nuthatch.
General nature of food, Bul. 30, p. 68.
Relation to orchards, Ybk. 1900, pp. 296–297.
Sitta carolinensis — White-breasted nuthatch.
Brief account, Bul. 17, p. 107; Bul. 38, p. 88.
Feeding on scale insects, Ybk. 1906, pp. 194, 197.
General nature of food, Bul. 30, p. 68.
Relation to orchards, Ybk. 1900, pp. 296–297.
Sitta pygmæa—Pygmy nuthatch.
Food in California, Bul. 30, pp. 67–68 (31 stomachs).
Skylark, see Alauda arvensis.
Snakebird, see Anhinga anhinga.
Snipe, Wilson's, see Gallinago delicata.
Snowbird, see Junco hyemalis.
Solitaire, see Myadestes townsendi.
Sora, see Porzana carolina.
Sparrow, Chipping, see Spizella passerina.
English, see Passer domesticus.
Field, see Spizella pusilla.
Fox, see Passerella iliaca.
Golden-crowned, see Zonotrichia coronata.
Grasshopper, see Ammodramus savannarum australis.
Harris's, see Zonotrichia querula.
Henslow's, see Passerherbulus henslowi.
House, see Passer domesticus.
Ipswich, see Passerculus princeps.
Java, see Padda oryzivora.
Lark, see Chondestes grammacus.
Lincoln's, see Melospiza lincolni.
Nelson's, see Passerherbulus nelsoni.
Savanna, see Passerculus sandwichensis.
Seaside, see Passerherbulus maritimus.
Sharp-tailed, see Passerherbulus caudacutus.
Song, see Melospiza melodia.
Swamp, see Melospiza georgiana.
Spanish, see Passer hispaniolensis.
Tree [American], see Spizella monticola.
Tree [Old World], see Passer montanus.
Vesper, see Poœcetes gramineus.
White-crowned, see Zonotrichia leucophrys.
White-throated, see Zonotrichia albicollis.
Spatula clypeata—Shoveler.
Brief account, Bul. 38, p. 19.
Feeding on larvæ and pupæ of *Ephydra hians*, Fauna 7, p. 17.
Vegetable food, Circ. 81, p. 1.
Speotyto cunicularia floridana — Florida burrowing owl.
Food of adults and nestlings, Ybk. 1900, p. 431.
Speotyto cunicularia hypogæa—Burrowing owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 31, p. 50; Circ. 61, pp. 3, 12, **13**; Ybk. 1894, pp. 217, 225, **227**.
Feeding on beetles, Bul. 4, p. 15; grasshoppers, Bul. 4, p. 15; Fauna 7, p. 44; horned larks, Bul. 2, p. 124; Bul. 23, p. 12; insects, Fauna 5, p. 97; Rept. 1889, p. 373; mice, Bul. 2, p. 124; pocket mice (*Perognathus hispidus paradoxus*), Fauna

Speotyto cunicularia hypogæa—Continued.
25, p. 137; scorpions, Fauna 5, p. 97; spermophiles, Bul. 4, pp. 15–16.
Formal report, Bul. 3, pp. 11, 14, 165, **189–196** (32 stomachs); Rept. 1887, p. 422 (10 stomachs).

Sphyrapicus ruber—Red-breasted sapsucker.
Brief account, Bul. 39, pp. 95–96.
Food in California, Bul. 34, pp. **21–22,** 29 (24 stomachs).
Formal report, Bul. 37, pp. 10, 11, **31–32** (34 stomachs).
Other notes, Bul. 34, p. 8.
Relation to trees, Bul. 39, pp. 16–21, **50–53,** 54–62, 86, 98–99.

Sphyrapicus thyroideus—Williamson's sapsucker.
Brief account, Bul. 39, pp. 95–96.
Formal report, Bul. 37, pp. 10, 11, **32–33** (17 stomachs).
Relation to trees, Bul. 39, pp. 9, 16–21, **53,** 54–62, 66, 98–99.

Sphyrapicus varius — Yellow-bellied sapsucker.
Brief account, Bul. 38, p. 47; Bul. 39, pp. 95–96; F. Bul. 54, pp. 9, 10; F. Bul. 54 (rev.), pp. 12–13; Ybk. 1900, pp. 294–295.
Feeding on fruits of cherry, flowering dogwood, grape, and sour gum, Rept. 1890, p. 284; scale insects, Ybk. 1906, p. 197.
Food at Marshall Hall, Bul. 17, pp. 19, 33, 62, **88–90,** 110.
Food of nestlings, Ybk. 1900, pp. 427–428.
Formal report, Bul. 7, pp. 7, 8, 10, 11, **28–31,** 38–39 (81 stomachs); Bul. 37, pp. 10, 11, **27–31,** 42, (313 stomachs).
Injurious, Bul. 34, p. 21; Ybk. 1907, p. 168.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to orchards, Ybk. 1900, pp. 294–295.
Relation to trees, Bul. 38, p. 47; Bul. 39, pp. 16–21, **21–50,** 54–91, 92–95, 98–99.

Spinus pinus—Pine siskin.
Feeding on weed seeds, Fauna 7, p. 85; Ybk. 1898, pp. 222, 229.

Spiza americana—Dickcissel.
Brief account, Bul. 38, p. 69; Ybk. 1900, p. 420.
Feeding on boll weevil, Bul. 22, p. 16; Bul. 25, pp. 9, 12, 18, 21; Bul. 29, pp. 6, 19, 30; Circ. 64, p. 5; weed seeds, Ybk. 1898, pp. 226, 227, 228, 229.
Food of nestlings, Ybk. 1900, p. 420.
Formal report, Bul. 15, pp. 23, 24, 28, 45, **89–92** (152 stomachs).

Spizella monticola—Tree sparrow.
Beneficial, Ybk. 1897, p. 670.
Brief account, F. Bul. 54, p. 28; F. Bul. 54 (rev.), p. 32.
Feeding on seeds, Bul. 9, pp. 17, 20; of grapes, Fauna 3, p. 96; of weeds, Fauna 3, p. 96; Ybk. 1898, pp. 222, 225, 226, 227; Ybk. 1907, p. 172.
Food at Marshall Hall, Bul. 17, pp. 16, 71, 74–75 (9 stomachs).
Formal report, Bul. 15, pp. 18, 25, 27, 37, 38, 39, 42, **75–76** (517 stomachs).

Spizella passerina—Chipping sparrow.
Beneficial, Bul. 38, p. 9; Ybk. 1897, p. 670.
Brief account, Bul. 38, p. 65; F. Bul. 54, pp. 26–27; F. Bul. 54 (rev.), pp. 31–32.
Feeding on cankerworms, Bul. 1, p. 263; mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 194; weed seeds, Ybk. 1898, pp. 222, 223, 224, 225, 226, 227, 228.
Food at Marshall Hall, Bul. 17, pp. 15–16, 22, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 39, 40, 43, 70, 71, **72–73,** 97, 110 (61 stomachs).
Food in California, Bul. 34, pp. **80–82,** 84 (96 stomachs).
Food of nestlings, Ybk. 1900, pp. 419–420.
Formal report, Bul. 15, pp. 15, 17, 18, 21, 23, 24, 26, 27, 28, 30, 32, 33, **76–78** (250 stomachs).
Other notes, Bul. 1, p. 93; Fauna 7, p. 119.
Reference to studies of food habits, Ybk. 1899, p. 264.

Spizella pusilla—Field sparrow.
Brief account, F. Bul. 54, pp. **26–27,** 28; F. Bul. 54 (rev.), pp. 31–32.
Feeding on boll weevil, Bul. 29, pp. 6, 20, 28, 30; Circ. 64, pp. 3, 5; weed seeds, Ybk. 1898, pp. 222, 223, 225, 226, 228.
Food at Marshall Hall, Bul. 17, pp. 15–16, 24, 26, 27, 30, 32, 34, 35, 40, 41, 60, 70, 71, 72, 73, 74, 97 (31 stomachs).
Formal report, Bul. 15, pp. 15, 18, 21, 23, 24, 25, 26, 27, 28, 30, 33, 37, 39, 42, **78–80** (175 stomachs).

Spizella socialis, see Spizella passerina.

Squatarola squatarola—Black-bellied plover.
Feeding on crowberries (*Empetrum*), Fauna 27, p. 332; grasshoppers, Circ. 79, p. 2.

Starling, see Sturnus vulgaris.

Steganopus tricolor—Wilson's phalarope.
Feeding on billbugs, Circ. 79, p. 6; crane flies, Circ. 79, p. 4; Dytiscidæ, Circ. 79, p. 8; mosquitoes, Circ. 79, p. 2.

Stelgidopteryx serripennis—Rough-winged swallow.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 33, 34, 35, 39, 98–99 (7 stomachs).
Protection urged, Circ. 57, p. 2.

Stercorarius parasiticus—Parasitic jaeger.
Feeding on beetles, dragon fly, fish, insects, and young tern, Fauna 27, p. 261.

Stercorarius pomarinus—Pomarine jaeger.
Pursuing gulls and terns to rob them of their prey, Fauna 22, p. 78.

Sterna fuliginosa, see Sterna fuscata.

Sterna fuscata—Sooty tern.
Fishing habits described, Fauna 14, p. 25.
Food of nestlings, Ybk. 1900, p. 434.

Sterna maxima—Royal tern.
Food of nestlings, Ybk. 1900, p. 434.

Sterna paradisæa—Arctic tern.
Food of nestlings, Ybk. 1900, p. 434.

Stilt, Black-necked, see Himantopus mexicanus.
Knudsen's, see Himantopus knudseni.

Stork, Maguari, see Euxenura maguari.
White, see Ciconia ciconia.

Strix aluco, see Aluco flammeus.

Strix occidentalis—Spotted owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 11, **156–157.**

Strix pratincola, see Aluco pratincola.

Strix varia—Barred owl.
Beneficial, Ybk. 1895, p. 590; Ybk. 1896, p. 628; Ybk. 1897, p. 670.
Brief account, Bul. 31, pp. 48–49; Bul. 38, p. 42; Circ. 61, pp. 3, **11–12** (109 stomachs); Ybk. 1894, pp. 217, **225**; Ybk. 1900, p. 430.
Feeding on Brewer's blackbird, cardinal, Bul. 2, p. 121; cotton rat (*Sigmodon hispidus texianus*), Fauna 25, p. 116; field mice, Bul. 31, pp. 48–49; Ybk. 1905, p. 371; Leconte's sparrow, Bul. 2, p. 121; rabbits, Ybk. 1907, p. 336; ruffed grouse, Bul. 24, p. 28.
Food of nestlings, Ybk. 1900, p. 430.
Formal report, Bul. 3, pp. 11, 14, 135, 146, **150–156** (109 stomachs); Rept. 1887, p. 419 (41 stomachs).

Sturnella magna—Meadowlark.
Beneficial, Rept. 1890, p. 280; Ybk. 1897, p. 670.
Bounty laws, Ybk. 1896, p. 57.
Brief account, Bul. 12, pp. 20–21; Bul. 12 (rev.), pp. 27–28; F. Bul. 54, pp. 21–23 (238 stomachs), F. Bul. 26–27 (285 stomachs); Rept. 1890, p. 280 (30 stomachs).
Exempt from protection in Georgia, Bul. 12 (rev.), p. 27.

Sturnella magna—Continued.
Feeding on boll weevil, Bul. 22, pp. 10, 16; Bul. 25, pp. 8, 9, 11, 21; Bul. 29, pp. 6, 9, 18, 27–28, 29, 30; Circ. 57, p. 4; Circ. 64, pp. 2, 3, 5; weed seeds, Bul. 15, pp. 37, 38–39; Ybk. 1898, pp. 222, 230–231.
Food at Marshall Hall, Bul. 17, pp. 12, 14, 22, 28, 30, 32, 34, 35, 37–38, 40, 70, 71, 77, **94–95,** 110, 111 (7 stomachs).
Formal report, Ybk. 1895, pp. 419, **420–426** (238 stomachs).
Other notes, Ybk. 1904, p. 514; Ybk. 1908, p. 346.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to clover seed, Rept. 1890, p. 280.

Sturnella magna neglecta, see Sturnella neglecta.

Sturnella neglecta—Western meadowlark.
Feeding on boll weevil, Bul. 22, pp. 9, 16; Bul. 25, pp. 8, 9, 11, 21; Bul. 29, pp. 6, 9, 18, 27–28, 30; Circ. 64, p. 5.
Food in California, Bul. 34, pp. 65–68 (91 stomachs).
Killed by eating poisoned grain, Bul. 23, p. 13; Circ. 76, p. 13; F. Bul. 352, p. 8; Ybk. 1908, p. 308.
Pulling wheat, Bul. 23, p. 15.

Sturnus vulgaris—Starling.
Admission denied, F. Bul. 470, p. 30; Rept. 1900, p. 41; Rept. 1904, p. 296; Rept. 1907, p. 493; Ybk. 1905, p. 545.
Admission to Western Australia prohibited, Rept. 1899, p. 68; Ybk. 1898, p. 109.
Driving other birds away, Bul. 1, p. 333.
Economic status, introduction dangerous, etc., Rept. 1899, p. 68; Rept. 1907, p. 493; Ybk. 1898, pp. 90, 101–103, 107, 109, 110.
Injurious, Circ. 34, p. 7; Circ. 80, p. 24; F. Bul. 160, p. 48; F. Bul. 180, p. 42; F. Bul. 470, p. 30; Rept. 1908, p. 587.
Injurious in Australasia, Rept. 1899, p. 68; Ybk. 1898, p. 109.
Other notes, Rept. 1899, p. 68; Rept. 1907, p. 493.
Repressive measures, Rept. 1908, p. 587.

Sula nebouxi—Blue-footed booby.
Feeding on fish, Fauna 14, pp. 23, 25, 32.

Surnia ulula caparoch—Hawk owl.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Brief account, Bul. 3, pp. 187–189; Rept. 1887, p. 422.

Surnia ulula caparoch—Continued.
Feeding on field mice, Bul. 31, p. 50; Ybk. 1905, p. 371; (*Microtus drummondi*) Fauna 27, p. 377; redpolls, ruffed grouse, Fauna 27, p. 377; spermophiles, Bul. 4, pp. 15–16; varying hare, Fauna 27, p. 376.

Swallow, Bank, see Riparia riparia.
Barn, see Hirundo erythrogastra.
Cliff, see Petrochelidon lunifrons.
European, see Hirundo rustica.
Northern violet-green, see Tachycineta thalassina lepida.
Rough-winged, see Stelgidopteryx serripennis.
Tree, see Iridoprocne bicolor.

Swan, Whistling, see Olor columbianus.

Swift, Chimney, see Chætura pelagica.
Syrnium nebulosum, see Strix varia.
Syrnium occidentale, see Strix occidentalis.
Syrnium varium, see Strix varia.

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Tachycineta bicolor, see Iridoprocne bicolor.

Tachycineta thalassina lepida—Northern violet-green swallow.
Food in California, Bul. 30, pp. 32–33 (74 stomachs).
Other notes, F. Bul. 54 (rev.), pp. 37–38.

Tanager, Scarlet, see Piranga erythromelas.
Summer, see Piranga rubra.
Tres Marias, see Piranga bidentata flammea.
Western, see Piranga ludoviciana.

Tantalus loculator, see Mycteria americana.
Teal, Blue-winged, see Querquedula discors.
Green-winged, see Nettion carolinense.

Telmatodytes palustris—Long-billed marsh wren.
Food at Marshall Hall, Bul. 17, pp. 20, 33, 34, 35, 38, 40, 43, **107** (5 stomachs).
Food in California, Bul. 30, pp. 62–64 (53 stomachs).
Food of nestlings, Ybk. 1900, p. 436.

Tern, Arctic, see Sterna paradisæa.
Black, see Hydrochelidon nigra surinamensis.
Royal, see Sterna maxima.
Sooty, see Sterna fuscata.

Tetrao urogallus—Capercaillie.
Feeding on birches and conifers, F. Bul. 197, p. 15.

Thrasher, Brown, see Toxostoma rufum.
California, see Toxostoma redivivum.
Leconte's, see Toxostoma lecontei.
Sage, see Oreoscoptes montanus.

Thrush, Gray-cheeked, see Hylocichla aliciæ.
Hermit, see Hylocichla guttata.
Olive-backed, see Hylocichla ustulata.
Russet-backed, see Hylocichla ustulata.
Song, see Turdus iliacus.
Varied, see Ixoreus nævius.
Wood, see Hylocichla mustelina.

Thryomanes bewicki—Bewick's wren.
Feeding on boll weevil, Circ. 64, pp. 4, 5; scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 57–60 (146 stomachs).

Thryothorus ludovicianus—Carolina wren.
Brief account, Bul. 38, p. 86.
Feeding on boll weevil, Bul. 22, pp. 8, 16; Bul. 25, pp. 9, 14, 21; Bul. 29, pp. 6, 21–22, 29, 30; Bul. 38, p. 86; Circ. 64, pp. 4, 5.
Food at Marshall Hall, Bul. 17, pp. 30, 32, **107.**

Titmouse, Black-crested, see Bæolophus atricristatus.
Blue, see Cyanistes cæruleus.
Bridled, see Bæolophus wollweberi.
Great, see Parus major.
Long-tailed, see Ægithalos caudatus.
Marsh, see Pœcile palustris.
Plain, see Bæolophus inornatus.
Tufted, see Bæolophus bicolor.

Totanus flavipes—Yellowlegs.
Feeding on grasshoppers, Circ. 79, p. 4.

Towhee, see Pipilo erythrophthalmus.
California, see Pipilo crissalis.
Green-tailed, see Oreospiza chlorura.
Spotted, see Pipilo maculatus subspecies.
Spurred, see Pipilo maculatus megalonyx.

Toxostoma lecontei—Leconte's thrasher.
Food in captivity, Fauna 7, p. 129.

Toxostoma redivivum—California thrasher.
Food in California, Bul. 30, pp. 55–56 (82 stomachs).

Toxostoma rufum—Brown thrasher.
Brief account, Bul. 38, p. 86; F. Bul. 54, pp. 34–35 (121 stomachs); F. Bul. 54 (rev.), pp. 40–41 (121 stomachs); Ybk. 1900, p. 415.
Feeding on boll weevil, Bul. 22, pp. 11, 16; Bul. 25, pp. 9, 14, 15, 21; Bul. 29, pp. 6, 23, 30; Circ. 64, p. 5; mahaleb cherries, Bul. 32, p. 65.
Food at Marshall Hall, Bul. 17, pp. 32, 38, 56, 60, **105–106.**
Food of nestlings, Ybk. 1900, p. 415.
Formal report, Ybk. 1895, pp. 405, 406, **411–415,** 418 (121 stomachs).
Other notes, Bul. 30, p. 55.
Reference to studies of food habits, Ybk. 1899, p. 266.
Request for information on economic value, Ent. Circ 20 [p. 2].

Tringa canutus—Knot.
Feeding on crayfishes, Circ. 79, p. 6; Dytiscidæ, Circ. 79, p. 8; grasshoppers, Circ. 79, p. 4; *Nereis*, Circ. 79, p. 8.
Trochilus colubris, see Archilochus colubris.
Troglodytes aëdon—House wren.
Beneficial, Ybk. 1897, p. 670.
Brief account, F. Bul. 54, pp. 35–36 (52 stomachs); F. Bul. 54 (rev.), pp. 41–42 (52 stomachs); Ybk. 1900, p. 413.
Food at Marshall Hall, Bul. 17, pp. 24, 25, 26, 30, 32, 33, 34, 35, 38, **45–46**, 49, **106–107**, 110 (20 stomachs).
Food in California, Bul. 30, pp. 60–62 (36 stomachs).
Food of nestlings, Ybk. 1900, pp. 413–415; Ybk. 1902, p. 216.
Formal report, Ybk. 1895, pp. 405, 406, **416–418** (52 stomachs).
Other notes, Bul. 1, pp. 96, 275; Ybk. 1904, p. 514.
Reference to studies of food habits, Ybk. 1899, p. 266.
Trogon ambiguus goldmani—Goldman's trogon.
Feeding on wild fig, Fauna 14, p. 61.
Tryngites subruficollis—Buff-breasted sandpiper.
Feeding on grasshoppers, Circ. 79, p. 2.
Turdus iliacus—Song thrush.
Admission denied, Rept. 1908, p. 581.
Admission to Western Australia prohibited, Rept. 1899, p. 68; Ybk. 1898, p. 109.
Injurious in Australasia, Rept. 1899, p. 68; Ybk. 1898, p. 109.
Turdus merula—Blackbird.
Admission to West Australia prohibited, Rept. 1899, p. 68; Ybk. 1898, p. 109.
Economic status, introduction dangerous, etc., Ybk. 1898, pp. 90, 106, 107, 109; Ybk. 1909, p. 257.
Injurious in Australasia, Rept. 1899, p. 68; Ybk. 1898, p. 109, in New Zealand, Ybk. 1909, p. 257.
Turdus musicus, see Turdus iliacus.
Turkey, Merriam's, see Meleagris gallopavo merriami.
Wild, see Meleagris gallopavo silvestris.
Turnstone, see Arenaria interpres.
Tympanuchus americanus—Prairie chicken.
Brief account, Ybk. 1900, p. 432.
Feeding on potato beetle, Bul. 32, p. 47; weed seeds, Ybk. 1898, p. 231.
Food of nestlings, Ybk. 1900, p. 432.
Formal report, Bul. 24, pp. **10–18**, 23 (71 stomachs).
Tympanuchus cupido—Heath hen.
Brief account, Bul. 24, pp. 18–19.
Tympanuchus pallidicinctus—Lesser prairie chicken.
Brief account, Bul. 24, pp. 19–20.
Tyrannus tyrannus—Kingbird.
Brief account, Bul. 38, p. 53; F. Bul. 54, pp. 11–12 (281 stomachs); F. Bul. 54 (rev.), pp. 14–15 (420 stomachs); Ybk. 1900, p. 426.
Feeding on bees, Bul. 34, pp. 32–33; Rept. 1899, p. 69; boll weevil, Bul. 29, pp. 6, 14, 15, 24, 29, 30; Circ. 64, p. 5; cherries, Rept. 1890, p. 282; mahaleb cherries, Bul. 32, p. 65; mulberries, Rept. 1890, p. 285; robber flies, Rept. 1899, p. 69; rose beetles, Bul. 32, p. 20.
Food at Marshall Hall, Bul. 17, pp. 17, 22, 23, 24, 26, 30, 31–32, 33, 34, 36, 37, 38, 39, 40, 56, 59, 60, 61, **91–92** (16 stomachs).
Food of nestlings, Ybk. 1900, p. 426.
Formal report, Rept. 1893, pp. 233–234 (171 stomachs).
Other notes, Ybk. 1904, p. 514.
Reference to studies of food habits, Ybk. 1899, p. 266.
Relation to bees, Bul. 34, pp. 32–33; Rept. 1899, p. 69.
Tyrannus verticalis—Arkansas kingbird.
Brief account, F. Bul. 54 (rev.), pp. 15–16 (62 stomachs).
Food in California, Bul. 34, pp. 32–34 (78 stomachs).
Tyrannus vociferans—Cassin's kingbird.
Brief notes on food, Bul. 34, p. 34; F. Bul. 54 (rev.), p. 16.

U.

Uria lomvia arra—Pallas's murre.
Food of nestlings, Ybk. 1900, p. 433.
Urinator arcticus, see Gavia arctica.
Uroloncha acuticauda—Japanese nun.
Admission to Hawaii denied, Rept. 1909, p. 542.
Urubutinga anthracina — Mexican black hawk.
Beneficial, Circ. 61, p. 3; Ybk. 1894, p. 217; Ybk. 1895, p. 590; Ybk. 1896, p. 628.
Formal report, Bul. 3, pp. 11, 84–85 (6 stomachs).

V.

Veery, see Hylocichla fuscescens.
Vermivora celata lutescens — Lutescent warbler.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 48, **51** (65 stomachs).
Vireo belli pusillus—Least vireo.
Feeding on scale insects, Ybk. 1906, p. 194.
Vireo, Cassin's, see Lanivireo solitarius cassini.
Vireo flavifrons, see Lanivireo flavifrons.
Vireo gilvus, see Vireosylva gilva.

Vireo griseus—White-eyed vireo.
Feeding on scale insects, Ybk. 1906, p. 195.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 26, 29, 34, 35, 40, 59, 60, 61, 102 (10 stomachs).
Vireo huttoni—Hutton's vireo.
Feeding on scale insects, Ybk. 1906, p. 194.
Food in California, Bul. 30, pp. 41–42 (54 stomachs).
Vireo, Hutton's, see Vireo huttoni.
Vireo, Least, see Vireo belli pusillus.
Vireo olivaceus, see Vireosylva olivacea.
Vireo, Red-eyed, see Vireosylva olivacea.
Vireo solitarius cassini, see Lanivireo solitarius cassini.
Vireo, Warbling, see Vireosylva gilva.
Vireo, White-eyed, see Vireo griseus.
Vireo, Yellow-throated, see Lanivireo flavifrons.
Vireosylva gilva—Warbling vireo.
Feeding on mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 194.
Food at Marshall Hall, Bul. 17, pp. 30, 35, 40, 102.
Food in California, Bul. 30, pp. 39–40 (110 stomachs).
Vireosylva olivacea—Red-eyed vireo.
Brief account, Bul. 38, p. 73.
Feeding on mulberries, Rept. 1890, p. 285; scale insects, Ybk. 1906, p. 195.
Food at Marshall Hall, Bul. 17, pp. 20, 23, 24, 29, 30, 34, 35, 39, 40, 43, 56, 59, 60, 61, 102 (13 stomachs).
Food of nestlings, Ybk. 1900, p. 416.
Vulture, Black, see Catharista urubu.
California, see Gymnogyps californianus.
Turkey, see Cathartes aura septentrionalis.

W.

Warbler, Audubon's, see Dendroica auduboni.
Bay-breasted, see Dendroica castanea.
Black-and-white, see Mniotilta varia.
Black-poll, see Dendroica striata.
Black-throated blue, see Dendroica cærulescens.
Black-throated green, see Dendroica virens.
Canadian, see Wilsonia canadensis.
Cape May, see Dendroica tigrina.
Lutescent, see Vermivora celata lutescens.
Magnolia, see Dendroica magnolia.
Myrtle, see Dendroica coronata.
Palm, see Dendroica palmarum.
Parula, see Compsothlypis americana.
Pine, see Dendroica vigorsi.
Warbler, Prairie, see Dendroica discolor.
Prothonotary, see Protonotaria citrea.
Townsend's, see Dendroica townsendi.
Wilson's, see Wilsonia pusilla.
Worm-eating, see Helmitheros vermivorus.
Yellow, see Dendroica æstiva.
Water-thrush, see Seiurus noveboracensis.
Louisiana, see Seiurus motacilla.
Water-turkey, see Anhinga anhinga.
Waxwing, Bohemian, see Bombycilla garrula.
Cedar, see Bombycilla cedrorum.
Weaver bird, Madagascar, see Foudia madagascariensis.
Whippoorwill, see Antrostomus vociferus.
White-eye, South African, see Zosterops capensis.
Widgeon, see Mareca americana.
Wilsonia canadensis—Canadian warbler.
Feeding on scale insects, Ybk. 1906, p. 195.
Food at Marshall Hall, Bul. 17, pp. 20, 29, 34, 39, 103–104.
Wilsonia pusilla—Wilson's warbler.
Feeding on scale insects, Ybk. 1906, p. 194.
Food at Marshall Hall, Bul. 17, pp. 20, 24, 103–104.
Food in California, Bul. 30, pp. 51–52 (52 stomachs).
Woodcock, see Philohela minor.
Woodpecker, Arctic three-toed, see Picoides arcticus.
Arizona, see Dryobates arizonæ.
California, see Melanerpes formicivorus bairdi.
Downy, see Dryobates pubescens.
Gila, see Centurus uropygialis.
Golden-fronted, see Centurus aurifrons.
Grayson's, see Dryobates scalaris graysoni.
Hairy, see Dryobates villosus.
Ivory-billed, see Campephilus principalis.
Lewis's, see Asyndesmus lewisi.
Nuttall's, see Dryobates nuttalli.
Pileated, see Phlœotomus pileatus.
Red-bellied, see Centurus carolinus.
Red-cockaded, see Dryobates borealis.
Red-headed, see Melanerpes erythrocephalus.
San Lucas, see Dryobates scalaris lucasanus.
Texas, see Dryobates scalaris bairdi.

Woodpecker, Three-toed, see Picoides americanus.
White-headed, see Xenopicus albolarvatus.
Yellow-bellied, see Sphyrapicus varius.
Wren, Bewick's, see Thryomanes bewicki.
Cactus, see Heleodytes brunneicapillus couesi.
Carolina, see Thryothorus ludovicianus.
Dotted cañon, see Catherpes mexicanus punctulatus.
House, see Troglodytes aëdon.
Long-billed marsh, see Telmatodytes palustris.
Rock, see Salpinctes obsoletus.
Winter, see Nannus hiemalis.
Wren tit, see Chamæa fasciata.

X.

Xanthocephalus xanthocephalus—Yellow-headed blackbird.
Brief account, Ybk. 1897, pp. 345, 351, 353.
Damage to corn, Ybk. 1894, p. 237; grain, Rept. 1887, pp. 428, 429, 430, 454, 455, 456; Ybk. 1897, pp. 345, 351, 353; Ybk. 1898, p. 230.
Feeding on weed seeds, Ybk. 1898, p. 230.
Formal report, Bul. 13, pp. 9, 11, **30–33** (138 stomachs).
Other notes, Rept. 1887, pp. 428, 429, 430.
Xenopicus albolarvatus — White-headed woodpecker.
Brief account, Bul. 37, p. 63.

Y.

Yellow-hammer [of Europe], see Emberiza citrinella.
Yellowlegs, see Totanus flavipes.
Yellowthroat, see Geothlypis trichas.

Z.

Zamelodia ludoviciana—Rose-breasted grosbeak.
Beneficial, Ybk. 1897, p. 670.
Brief account, F. Bul. 54, pp. 28–30; F. Bul. 54 (rev.), pp. 34–35; F. Bul. 456, pp. **7–9**, 12, 13.
Feeding on potato beetle, Bul. **17**, p. 25; Bul. 34, p. 93; Rept. 1888, pp. 535–536; Rept. 1889, p. 369; Rept. 1905, pp. 306, 314; Rept. 1906, p. 415; Ybk. 1907, pp. 173, 175; scale insects, Ybk. 1906, pp. 192, 195; weed seeds, Ybk. 1898, p. 230.
Food of nestlings, Ybk. 1900, p. 418.
Formal report, Bul. 32, pp. **33–59**, 71, 91 (176 stomachs),
Zamelodia ludoviciana—Continued.
Other notes, Bul. 1, p. 323; Fauna **27**, p. 449.
Reference to studies of food habits, Ybk. 1899, p. 266.
Zamelodia melanocephala — Black-headed grosbeak.
Brief account, F. Bul. 54 (rev.), pp. 35–36 (70 stomachs); F. Bul. 456, pp. **9–10**, 12, 13.
Feeding on black olive scale, Rept. 1905, p. 306; cherries, Bul. 34, p. 55; codling moth, Rept. 1904, p. 293; scale insects, Ybk. 1906, pp. 192, 194.
Food in California, Bul. 34, pp. 93–96 (225 stomachs).
Formal report, Bul. 32, pp. **60–77**, 91 (226 stomachs).
Relation to fruit in California, Bul. 30, p. 13; Ybk. 1904, pp. 246, 248, 251.
Zenaidura macroura carolinensis—Mourning dove.
Brief account, Bul. 38, p. 36; F. Bul. 54 (rev.), pp. 6–7 (237 stomachs); Ybk. 1900, p. 431.
Damage to grain, Ybk. 1897, p. 352; Ybk. 1898, pp. 231–232.
Feeding on seeds of bunch grass (*Oryzopsis cuspidata*). Fauna 7, p. 32; Hungarian grass (*Setaria italica*), Rept. 1887, p. 429; weeds, Bul. 12, pp. 16–17; Bul. 12 (rev.), p. 24; Bul. 15, pp. 38–39; Ybk. 1898, pp. 222, 231–232.
Food at Marshall Hall, Bul. 17, pp. 13, 43, 69, 70, 71, **77–78**, 85, 111.
Food of nestlings, Ybk. 1900, p. 431.
Killed by eating poisoned grain, Bul. 23, p. 13; Circ. 76, p. 13; Ybk. 1908, p. 308.
Other notes, Bul. 15, p. 74; Ybk. 1904, p. 514; Ybk. 1907, p. 170.
Zonotrichia albicollis—White-throated sparrow.
Brief account, Bul. 38, p. 64.
Feeding on boll weevil, Bul. 22, pp. 11, 16; Bul. 25, pp. 9, 12, 21; Bul. 29, pp. 6, 19–20, 30; Circ. 64, pp. 3, 5; waste oats, Fauna 33, p. 83; weed seeds, F. Bul. 54, p. 28; F. Bul. 54 (rev.), p. 32; Ybk. 1898, pp. 222, 224, 225, 226, 227.
Food at Marshall Hall, Bul. 17, pp. 16, 22, 30, 33, 34, 35, 38, 57, 71, 73, 75, 77 (17 stomachs).
Formal report, Bul. 15, pp. 15, 18, 26, 27, 28, 37, 39, 41, 42, 43, 45, 46, **72–75**, 83, 90, (217 stomachs).
Zonotrichia coronata—Golden-crowned sparrow.
Feeding on weed seeds, Bul. 15, p. 27; Ybk. 1898, pp. 222, 225, 226.
Food in California, Bul. 34, pp. **78–79**, 84 (184 stomachs).

Zonotrichia leucophrys — White-crowned sparrow.
Feeding on scale insects, Ybk. 1906, p. 194; weed seeds, F. Bul. 54, p. 28; F. Bul. 54 (rev.), p. 32; Ybk. 1898, pp. 222, 225, 226, 227.
Food in California, Bul. 34, pp. **75–77**, 84, 85 (516 stomachs).
Formal report, Bul. 15, pp. 21, 25, 27, 28, **69–72**, 74, 83, 90 (217 stomachs).
Other notes, Fauna 7, p. 89.
Zonotrichia leucophrys—Continued.
Relation to fruit in California, Ybk. 1904, p. 247.
Zonotrichia querula—Harris's sparrow.
Feeding on weed seeds, Ybk. 1898, p. 226.
Formal report, Bul. 15, pp. 27, 28, **68–69** (100 stomachs).
Zosterops capensis—South African white-eye.
Feeding on scale insects, Ybk. 1906, p. 192.

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